ENGINEERING NEWS-RECORD

APRIL 28, 1960

PRICE 50 CENTS

CONTENTS ON PAGE 17

► Stressed cables form circular roof p.36

► The race through Mont Blanc p.45

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APR 29 1960

Big power for pushing scrapers pays off p.30

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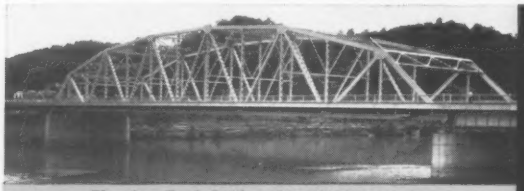
With 12 steel fabricating plants in Pennsylvania, Alabama, Maryland, Iowa, Wyoming, Utah and California, PDM meets promptly and efficiently the material requirements for highway bridges of every type. Skilled field organizations assure sound craftsmanship in erection, with crews experienced in all phases of bridge construction, including foundations, pile driving and concrete. ● Wherever your project, PDM's nationwide facilities can serve it well. Let us quote!



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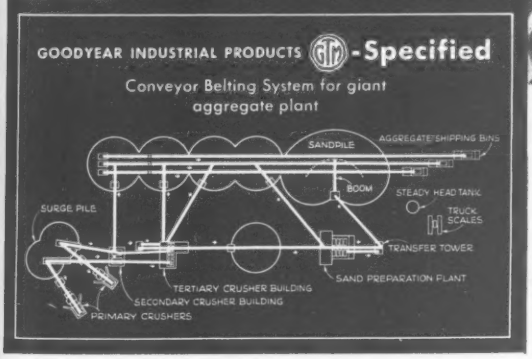
Belting a giant aggregate plant to turn out 2,200 tons an hour is a big order. But contractors need that eye-opening output for the construction of the waterways, power stations and reservoir of the $720-million Niagara Power Project. The G.T.M.—Goodyear Technical Man—was called on to study the belting needs of 51 separate conveyors. His recommendations were based on G.T.M. experience specifying for stand-out conveyor belt performance in plants, mines and construction operations the country over. Result: Over four miles of the G.T.M.'s belting now conveys everything conveyable at this plant. And before the project is completed, it is expected that over 10 million tons of aggregate will move over these belts.



No mystery why the G.T.M. gets the call on the biggest, fastest-moving conveyor-using jobs.

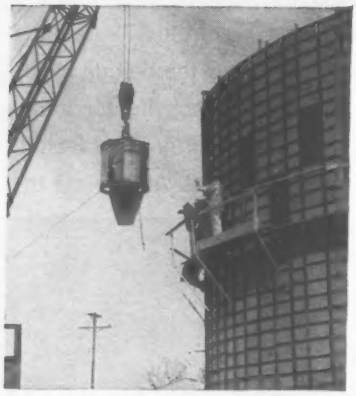
He—in team with the Goodyear Distributor—has earned an enviable reputation for belts that hold both tonnage and distance records. They're also your source for the finest of Hose, V-Belts and other industrial products. Just look under "Rubber Goods" or "Rubber Products" in your Yellow Pages. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

Lots of good things come from

GOODYEAR

THE GREATEST NAME IN RUBBER

16 Working Days

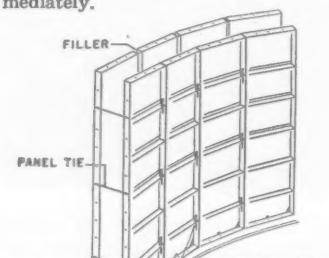


Experienced Men and Symons Forms

. . . Pour Sewage Treatment Plant in Record Time

One of the speediest sewage treatment plant projects ever undertaken in the Southwest was completed in 16 working days near Phoenix, Arizona. Capacity of plant is rated at 5 mgd. It has a 700,000 gallon digester.

F. H. Antrim Construction Company used 15,500 square feet of Symons Steel-Ply panels. An important factor in selecting Symons Forms was that they could be erected on one side of the circular tanks without installing ties immediately.



Forms were contracted for on a rental basis with an option to purchase. Later, Antrim decided that the forms were so well adapted to his work that he purchased 14,000 square feet of the panels.

Folder giving the complete Antrim story sent FREE upon request.

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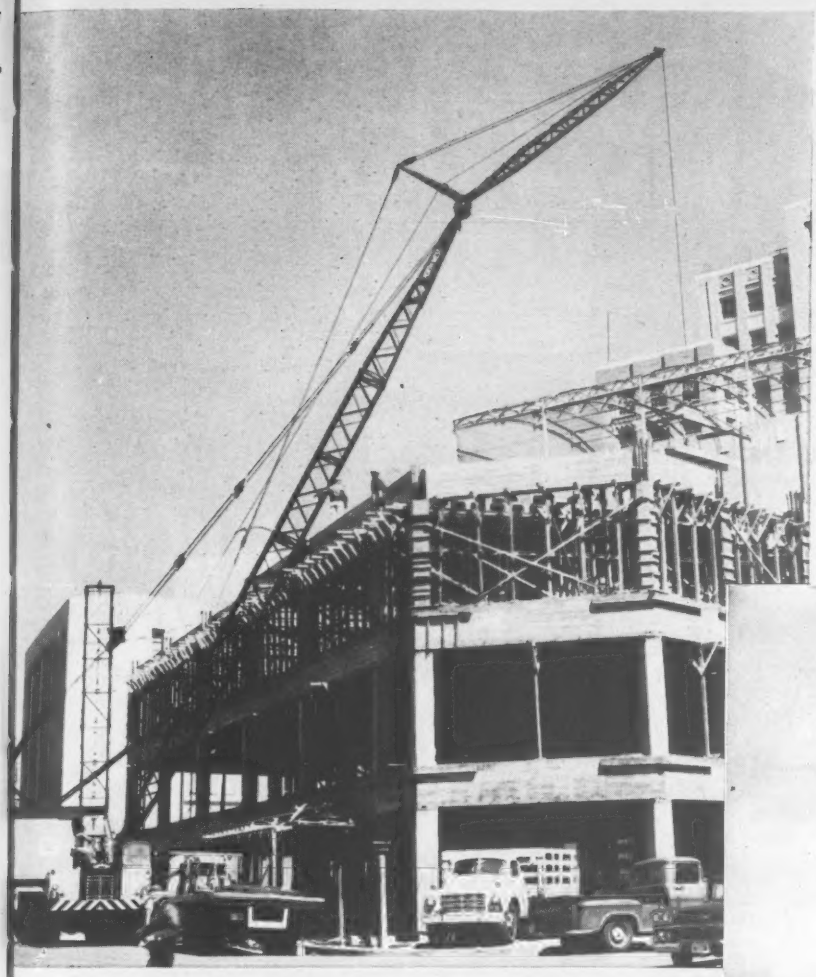
It's the lifts in the field— not the lifts on paper THAT PROVE A TRUCK CRANE!



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No other piece of equipment must meet the wide range of problems that a Truck Crane is called upon to meet! See a Northwest at work. Compare its easy handling—its accuracy—its smooth control—its stability under load.

Here is a powerful, dependable tool with every crane advantage you need—on a carrier designed with full consideration for Truck Crane problems. It has plenty of reserve capacity and it's always ready to go for handling the tough, sometimes unexpected jobs.

Here is equipment that brings smoothness of performance in handling high lifts and long booms. The Feather-Touch Clutch Control gives the true "feel" of the load that assures the accuracy for setting high steel or the gentleness needed for spotting a highly stressed concrete beam. Uniform Pressure Swing Clutches give you smooth engagement, freedom from the grabs and jerks that set a boom to jumping. With a Northwest you put the load where you want it without jockeying.

The Northwest Standard Worm Boom Hoist and the Northwest High Speed Boom Hoist give you a combination that meets any booming problem. The Northwest High Speed Boom Hoist operates without sacrificing either main drum, independently of all other operations. Both boom hoists operate under power—both up and down.

Northwest Truck Cranes bring you every advantage you require for crane work. Sectional Boom Hoist Rigging and Pendant Lines, Telescopic Boom Struts, Folding Gantries, Adjustable Jibs, Removable Counterweight, 3rd Drums, Open Throat Booms and a host of advanced carrier features combine to get your job done quickly and profitably.

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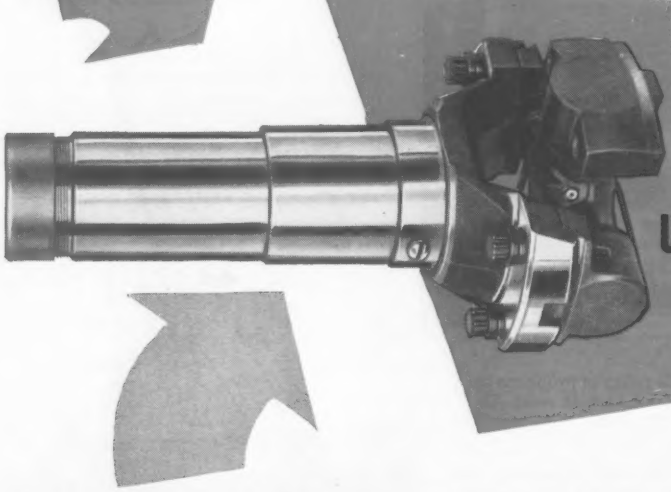
BLOOD BROTHERS "58WB" UNIVERSAL JOINT



To meet new drive line requirements on its 1960 model trucks, a major truck manufacturer needed a special, lightweight but strong universal joint—a unit that would provide greater torque capacity without increasing swing diameter. Rockwell-Standard engineers were consulted, and in a cooperative effort the new "58WB" was developed. It is now being used on several models in the manufacturer's 1960 line.

The design of the new "58WB" is applicable to medium-weight trucks, off-highway equipment, small crawlers and front-end loaders of approximately 1½ yards capacity. It can be made up as a complete drive line, furnished as a component part for a manufacturer's own drive line, or utilized in close-coupled drives. The "58WB" offers these outstanding advantages:

★ **More capacity than any joint of comparable size.** The "58WB" provides 39,000 inch pounds torque capacity with a swing diameter of only six inches!

★ **Key-type yoke.** Requires only four bolts for installation on original equipment. Saves downtime for repairs.

For more details about the new "58WB" or for help in solving any problems involving universal joints or drive lines, write or call us today.

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ROCKWELL-STANDARD
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Universal Joint Division, Allegan, Michigan

ROCKWELL R STANDARD

Longer, stronger AMVIT Jointed Clay Pipe will never fail when the heat is on

Hot water from washing machines and dishwashers softens substitute pipe, flattening it out of shape

The photograph on the right shows a section of substitute non-clay pipe which had to be replaced after only 14 months of service.

Hot water from automatic washing machines and dishwashers softened this pipe so that the heavy earth above the pipe simply flattened it out of round.

Grease and scum tend to build up on the interior of the pipe and act as a solvent on certain synthetic substitute pipes.

Today, after facing the severe test of time and service, many of these non-clay materials are breaking down, costing taxpayers thousands of dollars for replacements.

Amvit Jointed Clay Pipe simply cannot be destroyed by sewer service. Like the pipe, the plastic joint is acid resistant. The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action.

This is an actual photograph of a substitute pipe failure.

Because the joint is really tight, no foreign matter such as dirt, stones and roots can possibly enter the line.

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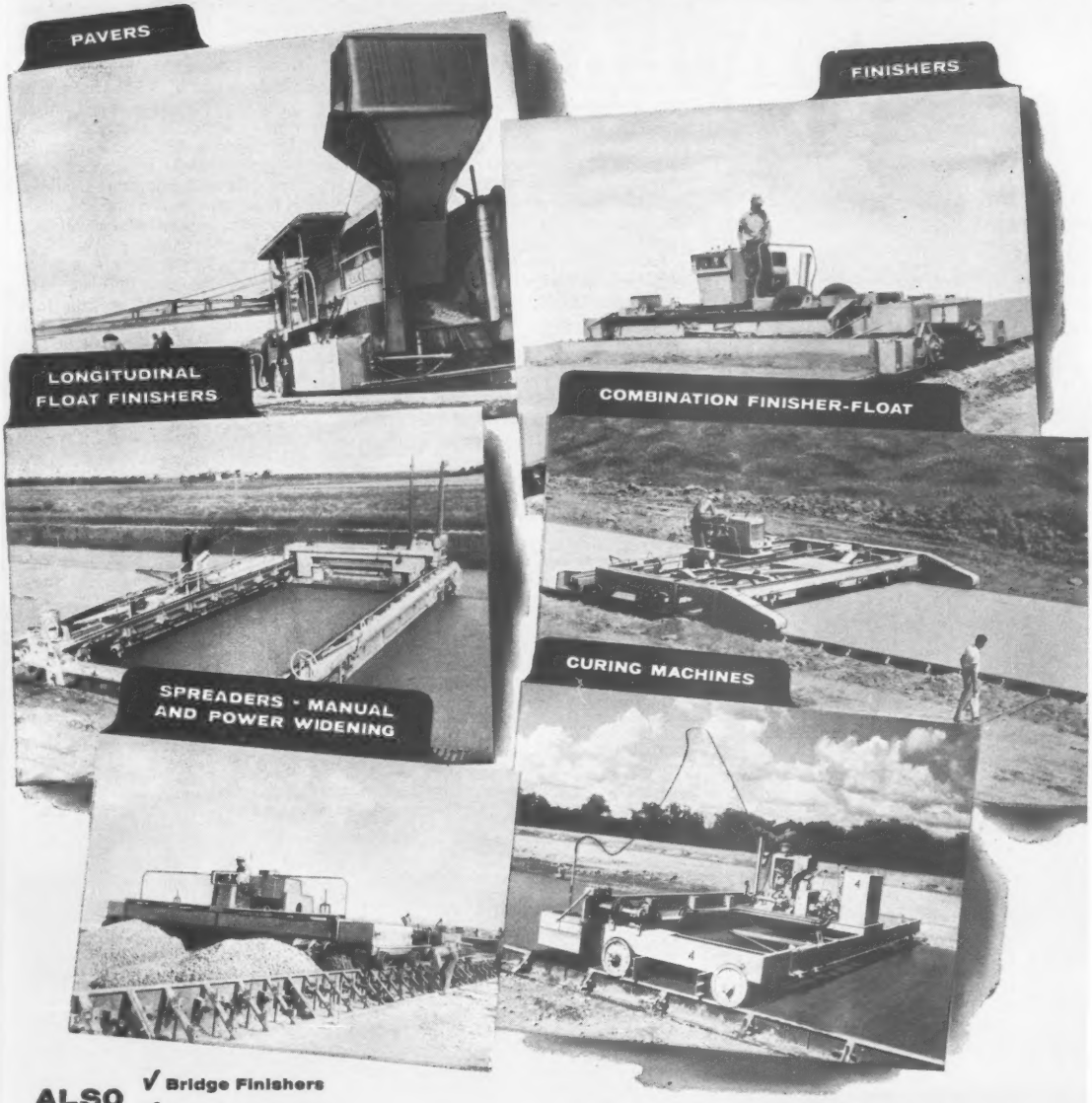

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Reader Comment

More Scholarships for Engineers

SIR—Your editorial "The Future Civil Engineer" (ENR Feb. 25, p. 128) correctly pointed out that we were the only civil engineering department recipient of National Defense Scholarships for engineering students. The reference, of course, was to the present year.

It should now be noted that about the time that the editorial appeared, recipients for the next academic year (beginning in September 1960) were announced. Several other schools qualified for these awards, I am happy to say, and they are named in the table below.

Each of the scholarships covers a three year period with stipends to the student of $2,000, $2,200 and $2,400 for the three years plus $400 per year for each dependent. The scholarships also allow $2,500 per student per year to the department concerned for faculty and equipment costs.

The fact that *only* 81 of the 1,000 scholarships went to all fields of engineering the first year was not realistic in my opinion. Some of the scholarships went to new Ph.D. programs in which the relation to national defense was rather remote and did not seem to me to be in the spirit of the National "*Defense*" Education Act. This year, however, 144 out of 1,500 scholarships were awarded in engineering, only a slight percentage of increase, but a sizeable increase for civil engineering and related fields. It is a hopeful sign that the Office of Education's philosophy is being modified to satisfy some of the practical aspects of education in engineering and science.

Your editorial is very much appreciated. The fact that ENR has taken such a forthright stand on something as controversial as the trend of engineering education has added to our esteem for your magazine.

GENE M. NORDBY, HEAD,
Department of Civil Engineering
University of Arizona
Tucson, Ariz.

Institution	Field	Scholarships
University of Arizona	Civil Engineering	5
A and M College of Texas	Structural Engineering and Mechanics	4
	1960-61	
University of Arizona	Civil Engineering	4
Carnegie Institute of Tech.	Civil Engineering	6
University of Illinois	Civil Engineering	3
Utah State University	Civil Engineering	2
North Carolina State College	Civil Engineering	3
Colorado State University	Civil Engineering and Irrigation	2
University of Washington	Fluid Mechanics	2
Virginia Polytech Inst.	Engineering Mechanics	3
University of Pennsylvania	Engineering Mechanics	6
University of California (Davis)	Irrigation Drainage and Water Resources	2
Columbia University	Dynamic Structural Design	4
Massachusetts Institute of Technology	City and Regional Planning	4
A and M College of Texas	Structural Engineering and Mechanics	4
Purdue University	Engineering Materials	3

For Your Calendar . . .

American Institute of Steel Construction, annual conference, Brown Palace Hotel, Denver, Col., May 5-6. Write: American Institute of Steel Construction, Inc., 101 Park Ave., New York 17, N. Y.

Caribbean Construction and Building Materials Exhibition, El San Juan Intercontinental Hotel, San Juan, Puerto Rico, June 3-9. Write: Economic Development Administration, 666 Fifth Avenue, New York 19, N. Y.

British Construction Engineering Industry Exhibition, New York Coliseum, New York, N. Y., June 10-26.

American Society of Civil Engineers Research Conference on Shear Strength of Cohesive Soils, University of Colorado at Boulder, Colo., June 13-17. Write: Dr. J. W. Hilf, Secretary, Task Committee on Shear Strength of Soils, ASCE, Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colo.

Western Association of State Highway Officials, annual conference, Multnomah Hotel, Portland, Ore., June 19-24. Write: Western Association of State Highway Officials, Annual Conference, State Highway Building, Salem, Ore.

American Society for Engineering Education, annual convention, Purdue University, June 20-24. Write: Prof. Mark Roberts, Engineering Administration, Purdue University, Lafayette, Ind.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-July 1. Write: ASTM, 1960 Race St., Philadelphia 3, Pa.

Conference on Civil Engineering Education, University of Michigan, Ann Arbor, Mich., July 6-8. Write: Prof. F. A. Wallace, Cooper Union, New York.

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Who supported the Winter Olympics?

Raymond did, with 324 step-taper piles driven to depths of 40 feet, under Blyth Arena at Squaw Valley, California. This beautiful, 8,500-seat arena now serves as a sports center and, incidentally, received a 1960 First Honor Award for building design by the AIA, and First Prize in Progressive Architecture's 1958 design competition. You'll find many of the nation's outstanding structures resting on Raymond Foundations.

And if you too would like to help support the Olympics, there's a way. Just send check or money order to U. S. Olympic Committee, Suite 1533, 9 Rockefeller Plaza, N. Y. 20, N. Y. The funds will go for the summer games in Rome, and in this way, you'll be making our team, your team.

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Here is the strongest, toughest, most economical sealant of its kind on the market today . . . *laboratory tested and field-service proved!* Presstite No. 55-MIL Sealer is a Polysulfide Polymer, two-component, cold-applied sealing compound, specifically designed for sealing joints in Portland Cement Concrete, military and commercial airfield paving, exposed to the action and operational requirements of jet aircraft.

1. **Resists repeated blast** from high jet turbine thrust.
2. **Resists super-elevated temperatures** of after-burner "cut-in".
3. **Resists impregnation** by foreign materials.
4. **Resists action of jet fuels:** JP-3, JP-4, JP-5; "SKYDROL" (fire-resistant hydraulic fluid); also detergents and oils.
5. **Resists action of repeated freeze-thaw cycles,** will not crystallize at sub-zero temperatures.
6. **Maximum adhesion** to clean concrete surfaces.
7. **High cohesive strength.**
8. **High ductility,** remains ductile at *minus* 20°F.
9. **Fast curing,** sets up tack and is track-free within 60 minutes after application.

For a joint sealant that will *last*—specify Presstite No. 55-MIL Sealer *first*—get tomorrow's sealer today!

Note: A modification of No. 55-MIL is available for sealing joints in PCC highways, bridge decks, parking lots and industrial floors. Known as Presstite No. 55-HWY (Highway Type). Your inquiry is invited. Write Dept. C-2.

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AMERICAN-MARIETTA COMPANY

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The Cat No. 12 Motor Grader: Tops in its class on any road!

No matter what the type of road or road work, you can count on top performance at low operating cost from a No. 12. On country roads and cross-country highways, this rugged machine has earned its reputation as "The Standard of the Industry."

Here, for example, a No. 12 is working on a stretch of interstate construction near Buchanan, Virginia. Says Superintendent Robert O. Shook of the Nello L. Teer Company, Durham, N. C.: "From my experience with various motor graders I am convinced that the No. 12 is tops in its class. We can get more work out of a No. 12 because it gives us less maintenance trouble—it stays on the job with a minimum of down time. We also get excellent service from our Caterpillar Dealer."

Many factors make the No. 12 a big producer. Here are some:

MECHANICAL CONTROLS (standard) provide precise adjustment, reduce kickback, ease engagement. "Anti-creep" lock makes blade stay put under load.

UNEQUALED VISIBILITY results from the No. 12's dash-mounted lift gears and low frame design. While seated, the operator has an unobstructed view of the critical areas at the front wheels, toe of blade and circle.

EXCLUSIVE OIL CLUTCH provides up to 2,000 hours' service without adjustment, the equivalent of about 12 months of "adjustment free" operation. Virtually eliminates down time for clutch repair.

OPTIONAL AUTOMATIC BLADE CONTROL is an attachment that cuts grading time in half. Operator sets desired slope on dial and only has to control depth of cut. Now transistorized for freedom from maintenance and adjustment, the unit automatically maintains blade slope within ⅛″ in 10′. Fine for *all* types of grading.

See the improved No. 12 at your Caterpillar Dealer. Whatever the job, he has the right capacity motor grader for it. Besides the 115 HP No. 12, there's the big new 150 HP No. 14 and the 75 HP No. 112. Ask for a demonstration.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

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MORE PRODUCTION...
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MODEL X 691-E

Here is a new COMPACT Jet Seal Applicator —researched to meet the specific requirements of engineers for a lightweight, extremely mobile, high-efficiency joint sealant applicator.

Thoroughly tested and proved in the field, the Allied COMPACT Applicator is ideal for tight sealing spots: gutter joints, curb joints on bridges . . . and for preventive maintenance sealing of all types.

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- Light weight: 650 lbs. 22 inches wide, 48 inches long. Will turn in the space of its own length. May be transported in a pick-up truck.
- Ideal for sealing vertical and overhead joints. Light enough to be hoisted.
- Can apply 100 lbs. of Allied JET SEAL per hour. Each of the two component vats holds 10 gallons of material.

Manufactured by Allied Stroud Corp., a division of Allied Materials Corp., the Allied Stroud Applicators are the only equipment authorized for the application of Allied JET SEAL (Products 9015H, 9015M). Allied JET SEAL is the original two-component, polysulfide, polymer type joint sealing compound.

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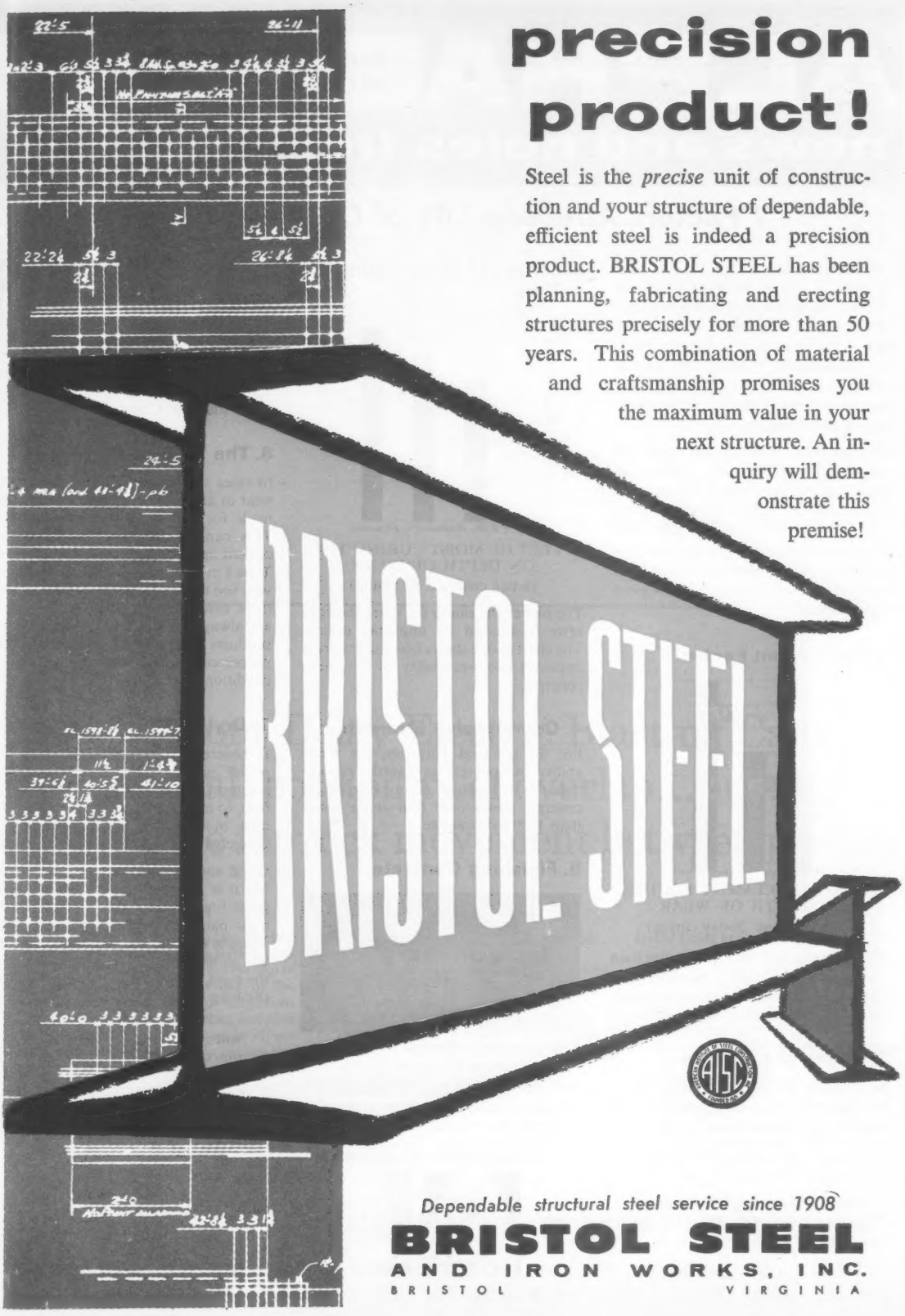

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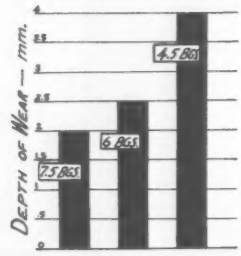
ALPHA
BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS
news and notes from the field

7 Factors Affecting Life of Concrete Floors

Long-wearing concrete floors are easy to build if a few practical steps are observed in designing, placing and curing them. Naturally, the most important part of the floor is its wearing surface. The hardness or "wearability" of the surface is of special importance for such jobs as industrial floors, warehouses, loading platforms, etc.

Through years of on-the-job study and extensive research work, Alpha has found that the following 7 factors must be considered if floors are expected to endure heavy wear. *Please note that these factors are not short cuts and also you can't omit the importance of quality materials, good supervision and good workmanship.*

1. The Cement Factor



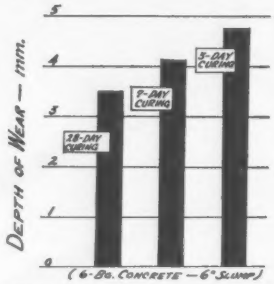
EFFECT OF CEMENT FACTOR ON DEPTH OF WEAR
(2″ slump and 28-day curing)

A 7.5-bag mix will wear 20% better than a 6-bag mix and 100% better than a 4.5-bag mix at the same slump and with the same 28 days moist curing.

2. Slump of Concrete

By *reducing* the slump from 6″ to 2″, the wearability of floors made of 4.5-bag concrete will be increased by 15%.

3. Length of Moist Curing Time



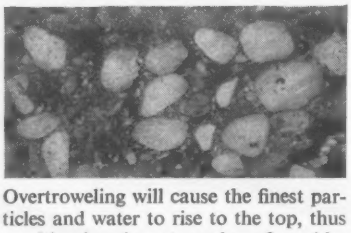
EFFECT OF MOIST CURING TIME ON DEPTH OF WEAR
(6-bag concrete, 6″ slump)

The higher the slump the more the concrete is affected by improper curing. The chart above shows how moist curing improves the wearability of 6″ slump concrete.

4. Compressive Strength

For all practical purposes, the wearability of concrete is directly proportional to its strength. Example: 6000 psi concrete wears over four times better than 1800 psi concrete.

5. Finishing Concrete



Overtroweling will cause the finest particles and water to rise to the top, thus resulting in a low strength surface skin.

The importance of troweling at the right time can be seen in the fact that the surface skin of 0″ to 4″ slump concrete can show the *same* amount of wear. Water and fines brought to the surface through careless troweling of lower slump concrete reduces the surface strength until it is no better than higher (up to 4″) slump concrete. The surface hardness of 4″ slump concrete is 100% better than 10″ slump concrete.

6. The Type of Cement

In cases where concrete is subjected to wear at an early age, provision must be made for high-early concrete strength. This can be done by using hi-early cement or a higher cement factor where Type I cement is used. Such conditions vary too much for specific recommendations here, but Alpha's field engineers are always available to users of Alpha products to assist in determining the proper construction method for special conditions.

7. Drying After Curing

If concrete is permitted to dry *after proper curing*, its surface skin strength is almost doubled. It is advisable, therefore, to allow at least one day of drying after moist curing before the floor is subjected to heavy wear.

Good sound aggregates are important, but it is the mortar binding the aggregates together that determines, for the most part, the wearability of the floor. There is no short cut to quality concrete and as has been proved time and again, the right way is the most economical in the long run.

Note: *All data on this page are approximate and intended for general guidance and not specific rules in concrete floor design and construction.*

Reprints of the helpful information presented on this page are available on request.

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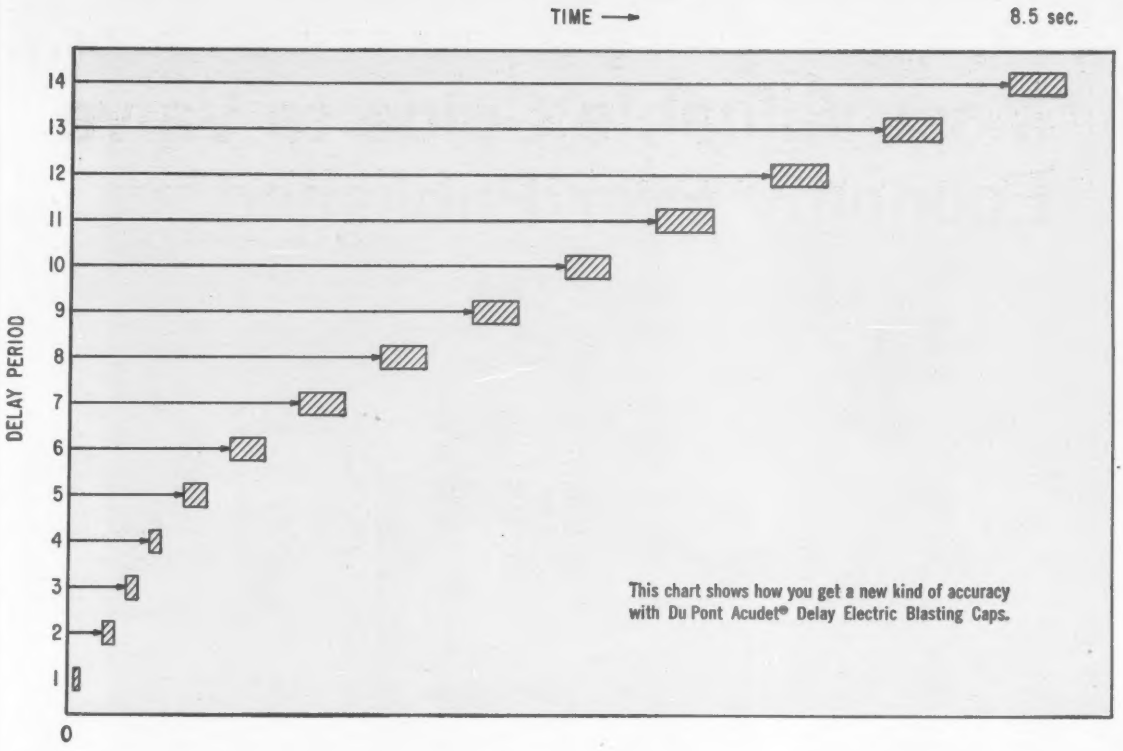

New Du Pont Delay Electric Blasting Caps eliminate all possibility of overlap...provide ample time for rock movement between periods

Du Pont's new series of delay electric blasting caps is made to fire with a definite time gap between the slowest cap of any period and the fastest cap of the next highest period. This not only eliminates all possibility of overlap, but also provides ample time for rock movement between periods. This makes the Du Pont Acudet Delay a major forward step in delay blasting control. Manufactured by mechanical assembly to closer timing tolerances than ever before possible, this new series assures a positive time gap of 1/10 to 1/2 second (see the graph above) between periods through the entire series of 14 delays.

The timing of each period and the length of the time gap between periods have been carefully selected to give optimum blasting results under all conditions. For instance, the time gap between the first and second delays is made long enough to insure the rock from the cut being out of the way before the first relievers go.

In the few months that they have been in the field, Du Pont Acudet Delays have been widely and enthusiastically accepted. Experience in a variety of operations has confirmed these advantages:

1. **Less bootleg**—more advance per round
2. **More uniform fragmentation**—easier mucking
3. **Less overbreak**—better shearing action
4. **Shorter shells**—easier to make primers
5. **Aluminum shells**—corrosion resistant
6. **First period fires in 1/40 second**—no need for special timing or circuit breaking equipment.

Like all other Du Pont Electric Blasting Caps Acudet Delays are mechanically assembled with nylon plastic insulation, rubber plug closures, and shielded shunts.

Ask your Du Pont representative *now* for detailed information on the phenomenal accuracy of Acudet Delays and what this means for you in your operation.

Call him direct or write to Du Pont, Explosives Department, 6440 Nemours Building, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

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During the last war, when valves were in short supply, "Prevent Valve Failure Before It Starts" was prepared by Jenkins Bros. as a patriotic service. It has been called "the most valuable guide to valve economy ever published". Continuing requests for this out-of-print book led to a recent decision to reprint it.

This book is not advertising matter, and it contains no catalog data. It is costly to produce and the quantity is limited but plant and building operating and maintenance executives and others who install and maintain valves are more than welcome to a copy. Ask your local Jenkins distributor for it.

THE CONTENTS, and the purpose of this book, are given in the following Foreword; page 1 . . .

"Valve economy is an objective of good plant management at all times. It is more important than ever today because of the greatly increased costs of valve replacement and maintenance that have paralleled the rise in all expenses of plant operation.

Most valve failure can be prevented before it starts. But to prevent failure, and insure the efficient operation of valves that contributes to plant productivity, four rules must be constantly followed: proper *selection,* correct *installation,* adequate *inspection,* and experienced *maintenance.*

This booklet has been prepared for plant management and supervisors, to explain and illustrate the principal causes of valve failure, how to prevent similar failures, and how to repair damaged valves. In addition to general instructions for installation and maintenance, it includes several examples of actual valve damage and destruction which have been brought to the attention of Jenkins Engineers. In each case the relatively simple precautions that would have prevented such needless waste are clearly explained, in non-technical language."

JENKINS VALVES

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ENGINEERING NEWS-RECORD

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CONTENTS

Interstate Program Takes the Stand..... 21
World's Fair Sparks Big Road Plans..... 23
Bye Bye 'Buy American' for Road Jobs..... 23
Two More ICBM Sites Chosen..... 24
Texas Takes a First in Skyscrapers..... 24
Channel Study Favors Separate Rail Tunnels.... 24
Preboring Sinks Piles the Quiet Way..... 25
Pictures of the Week..... 26
Meeting Spotlights Biologic Treatment..... 28
Pay Raise for U. S. Employees?..... 28

FEATURES

Big Power for Pushing Scrapers..... 30
Prestressing Stabilizes Unusual Cable Roof..... 36
Contractor Builds Low-Cost Tunneler..... 42
Obstacles Slow Big Tunnel Job..... 45

FIELD AND OFFICE

Steel From Old Structure Becomes New Deck... 53
The Press Descends to the Sewer..... 54
Long Chutes Speed Mat Casting..... 54

NEW PRODUCTS

Three Aids to Faster Pushloading..... 56

MEN AND JOBS

James Fairman to Receive NSPE Award..... 61

BUSINESS AND FINANCE

Business Plans Record Outlays..... 96
Goal: 1.6 Million Houses a Year..... 98
Federal Buildings OK'd by Works Groups..... 98

LABOR

Employers Hit Picketing Bill..... 101
Court Rejects Hiring Rule..... 102
NLRB Sets a Faster Pace..... 102

Reader Comment.... 8 Unit Prices 63
Calendar ..... 8 Materials Prices..... 67
Washington Observer 19 Construction Reports. 73
Obituaries ..... 62 Statistics, Indexes ... 94
Editorials..... 116

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THE CONSTRUCTION WEEK

CONSTRUCTION DOESN'T PAY—Stockholders at the annual meeting of Merritt-Chapman & Scott Corp., this week were shocked to hear Board Chairman Louis E. Wolfson say, "If we had stuck strictly to the construction business you people would have no dividends, no stock and no company—nothing—because that's exactly the earnings of the construction division over the last 11 years: Nothing." During this period Merritt-Chapman has held such large contracts as the foundations for both the Mackinac Straits and the Throgs Neck bridges as well as for Priest Rapids and Glen Canyon dams. The two dam contracts were the largest single construction contracts that have ever been bid.

NEW STEEL SPEC COMING—A new structural steel specification that will permit a 10% increase in working stresses has been approved by the subcommittee on structural steel of the American Society for Testing Materials. The new steel will differ from ordinary A7 steel principally in that the yield point will be raised from 33,000 psi to 36,000 psi; carbon will be controlled in all thicknesses and manganese in certain thicknesses. Cost may be greater than for A7, but not proportionately larger than the increase in stresses. If ASTM approves the new specification, chances are good that the new steel will completely replace A7 steel in ordinary structural applications and A373 steel, to some extent, in welding applications.

TOLLROAD REVIVAL—Plans are being prepared, right-of-way acquisition will begin May 15, and construction is expected to get under way by Sept. 1 of this year on Kentucky's 40.3-mile tollroad between Winchester and Campton. Tollroad bonds will be sold, supplemented by state funds, if necessary.

PRESIDENTIAL PROSPECTS—The nominating committee of the American Society of Civil Engineers may be faced with a decision when it meets in Reno, Nev., in June. Candidates most frequently mentioned for ASCE's presidency in 1961 are Prof. Glenn W. Wholcomb, chairman of the Department of Civil Engineering at Oregon State College, and Samuel B. Morris, consulting engineer with the Los Angeles Department of Water and Power.

We're Proud That . . .

ENGINEERING NEWS-RECORD is winner of Associated Business Publications' 1959 Jesse H. Neal Award—business publishing's equivalent of Hollywood's Academy Award. The award is for "Fitting Cities to the Future" (ENR Nov. 19, 1959, p. 55), a special report on the planning and construction of Pittsburgh's redevelopment.

Project: Sewage Treatment Plant, Jacksonville, Fla.
General Contractor: Sullivan, Long & Hagerty, Birmingham, Ala.
Engineers: Metcalf & Eddy, Boston, Mass.

Despite large volume of air entering wellpoint system...

One Pump Controls 24′ of Water on big job

Predrainage requirements for this wet site were as follows: (1) Lower ground water from elevation 108 to elevation 84. (2) Use single-stage system (not expensive two-stage system) inside a 2,000-ft perimeter. (3) Handle large air volume in the pumping. (4) Install wellpoints in sand wicks to operate dependably in the job-site's fine sand and clay.

- **The Griffin plan** used by the contractor—and supervised by a Griffin specialist—was based on long experience in the region.
- **Photo shows** the results: excavation kept dry and stable—24 ft of ground water gone. Contractor's cost? Well below estimate. Call Griffin for *your* wellpoint work.

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25th YEAR

WASHINGTON OBSERVER

- **Power needs on the rise**
- **Senate encourages flood plain zoning**
- **GSA takes on discrimination problem**

- **The nation's electric power needs will shoot up tremendously in the next 20 years,** according to four studies published this week by the Senate Select Committee on National Water Resources, headed by Sen. Robert S. Kerr (D., Okla.).

  Most of the needs will be met by steam plants. Further development of the easiest hydro plants will contribute, as will nuclear plants, but to a lesser extent.

  The studies were made by the Federal Power Commission, the American Public Power Association, the Edison Electric Institute, and Resources for the Future, Inc.

  FPC foresees power requirements tripling from today's 129 million kw to nearly 389 million kw. To supply this demand, FPC forecasts increase in steam capacity to 379 million kw, and in hydro from 30 million kw to over 64 million kw. The commission makes no nuclear estimate.

  EEI predicts requirements to be 501 million kw, with steam capacity quadrupling and hydro doubling. EEI sees the atom providing 8% of capacity.

  APPA points out that FPC estimates are historically too low, and that a growth rate of 10% a year is justified.

  Resources for the Future says the FPC is "unduly pessimistic" in its estimates on the growth of hydro. Improved technology will permit development of more water power than FPC estimates.

  Steam plant needs for cooling water, FPC estimates, will triple in the two decades, to 260 billion gal or more per day.

—

- **"Flood plain zoning" will get federal encouragement in the 1960 Rivers and Harbors Authorization Bill now before the Senate Public Works Subcommittee.** Senator Kerr, chairman of the subcommittee, says the Senate bill will include the idea of having the Corps of Engineers and other federal agencies assist localties establish zoning regulations. Such zoning would limit the buildup of industrial, commercial and residental property on lands subjected to flooding. The subcommittee is now working on the $640-million, House-passed bill.

—

- **The issue of discrimination against Negroes on two Washington, D. C., construction projects has been dumped on the General Services Administration.** The President's Committee on Government Contracts, on advice of member John Roosevelt, last week concluded it could not bring a settlement by persuasion.

  GSA, which let the contracts with the builders, is now going over records in the case, including reports on Negroes recommended for hiring.

  It looks like the government may try to get an injunction against the contractors, or even cancel the contract.

US RUBBER TRUCK DOCK FENDERS

Cross section showing rubber bumper mounted directly to concrete. Vertical bumper gives elevation protection for low vehicles.

How to stop being a rail splitter

Give up using wood timbers across the face of truck depots. You'll not only stop being a rail splitter, but you'll stop denting the trucks.

A case in point: Recently a new truck terminal was equipped with the usual wood timbers across the face of the dock. Within the following week, the wood timbers were splintered and bruised by trucks backing against the dock.

Then U. S. Rubber Truck Dock Fenders were installed. These fenders have been on the job for over six months so far and they have prevented any damage to the dock or the trucks. They have a neat appearance (no ragged, splintered look), are easily installed, will withstand batterings from battalions of trucks.

• • •

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Interstate Program Takes the Stand

- **House highway subcommittee promises sensational revelations of graft and corruption in Interstate administration.**
- **Next week's hearings will concentrate on alleged mismanagement on construction of a bypass near Tulsa.**
- **But it's just the beginning. A long investigation lies ahead.**

Washington will be the scene of a preview next week—a hint of sensational disclosures of graft and corruption in the nation's multi-billion dollar highway program. Like all previews, its aim is to reveal just enough to give everyone an appetite for the complete performance.

The House of Representative's special subcommittee on highways will produce the show. The director is Rep. John D. Blatnik (D., Minn.). The preview will be a week of hearings.

The subcommittee is set to unleash a blistering attack on the way the Bureau of Public Roads administers the Interstate Highway Program.

The immediate reasons for the congressional hearings are charges of graft and corruption that allegedly occurred in the construction of the nine-mile Skelly Bypass that links the Will Rogers and Turner Turnpikes near Tulsa, Okla. After only about a year's use the asphalt Interstate link is said to show undue signs of wear (ENR Mar. 31, p. 20).

The condition of the bypass set off a flurry of charges and counter charges that were followed by a series of indictments. The first accusations of malpractice in construction of the highway were made locally. Then a flying squad of Rep. Blatnik's investigators moved in to build their own case.

According to reports the subcommittee feels that it has a tailor-made situation to prove its point: First, that the taxpayer is being bilked, that he isn't getting first class roads for his dollars; and, second, that a congressional investigating staff is needed to police the program.

This year Congress gave the roads subcommittee some $295,000 to tide it through its first year's operation. The committee plans to use this to run a series of short hearings on specific cases this year to show the need for a congressional watchdog. It expects to stir up enough doubt about the highway program administration to have little trouble in getting Congress to refill its coffer next January. An all out investigation of the road program is planned then.

When the highway hearings start Monday, all efforts will be made to keep the procedure from being labeled as a political maneuver. But there is strong doubt that the session will last long before politics creeps in.

Indications are that some nimble footwork is in store. Already the committee's actions have split its members along party lines.

Republican member Gordon H. Scherer of Ohio has been particularly outspoken about letting the road program become a whipping boy in an election year. Both Rep. Scherer and his fellow Republican committee member, William C. Cramer, of Florida, have been accused of trying to cover up for the way the road program is handled.

Reportedly, Rep. Scherer opposed an airing of the Tulsa incident before a congressional committee at this time. His argument, sources say, was that while the matter was under state prosecution, witnesses under criminal indictment should not be hauled before a congressional committee.

Democratic members of the committee are just as strong in their drive to push the committee investigations now and let the votes fall where they will.

Rep. Blatnik made it clear that he intends to dig just as deeply as he pleases into the highway program, and in any state he wants to. Fellow Democratic members, James C. Wright, Jr. of Texas and Frank M. Clark of Pennsylvania, are strong in supporting him.

Trying to keep a fine balance between the immediate Tulsa case under investigation and the political finger pointing that seems sure to come will be the job of subcommittee counsel Walter R. May. As chief counsel, Mr. May will leave accusations of haphazard Bureau of Public Roads control over the highway program to the politicians. But Mr. May has cleverly worked out his strategy of handling the evidence in the matter so that such a conclusion may be easy to reach.

With the Federal Bureau of Investigation for six years, and then seasoned in congressional committee tactics through a three year stint with the McClellan labor rackets committee, Mr. May feels that he has locked on to a virtually air-tight case in the Tulsa project and is going to ride it hard.

Mr. May knows, too, that the very size of the gigantic highway program could make it a rich source of graft and corruption by all odds of the game. He has a well qualified staff of investigators to back him up. Rep. Blatnik's subcommittee was formed last autumn when the McClellan rackets committee was dissolved. He was quick to pick up most of the McClellan staff of investigators that were so successful in keeping the labor issue in the headlines.

Included in the team shift is the highly competent private consultant, Carmine Bellino. Mr. Bellino is generally credited with ferreting out most of the financial skullduggery that took place among the union officials. On the Blatnik staff—although technically not a part of it, but under hire—Mr. Bellino is the "records and books" expert.

Undoubtedly, his expertness will show in the forthcoming hearings. It is known that Mr. May, Mr. Bellino and other staff investigators were operating out of the Mayo Hotel in Tulsa for a number of days before any tip-off came of congressional hearings.

Reports are that Chief Counsel May is loaded with evidence that could show shady dealings on the Tulsa bypass project and embarrass the Bureau of Public Roads as well. Because the facts of the case are apparently so well documented, some observers say the only reason for having congressional hearings is to put the heat on BPR, and milk political profit out of the situation.

(*Story continues on p. 22*)

Regardless of why the hearings are held, they are expected to provoke a storm of criticism over the administration of the highway program.

During the early days of the hearings, Mr. May plans to call in witnesses from BPR, Oklahoma State Highway Department and from the Tulsa contracting firm of Layman & Sons, which handled the project. Then, Counsel May will throw his evidence at the witnesses. One piece of evidence that is sure to have its effect is an analysis of core samplings of the pavement structure—taken after the highway was accepted by both federal and state officials—that reportedly shows it was not built to federal specifications.

Another piece of evidence in the hands of the committee that could embarrass the Bureau of Public Roads is a report submitted to the bureau by its regional representative. When the first complaints about the highway were raised, the bureau ordered an investigation of the matter by its local man. The report sent to Washington gave the stretch of highway a clean bill of health and discounted the complaints about it.

Once the congressional investigating team moved in and developed its case, the Bureau of Public Roads was informed of its findings. Then, Highway Administrator Bertram D. Tallamy threw in a team of the bureau's top experts who reportedly had to agree in general with the committee's findings. The bureau called in the FBI.

Mr. May says he has some surprise witnesses that he may pull out of the bag to clinch the case further.

The BPR is said to be convinced that it must stand and take a beating before the congressional committee. However, it plans to try hard to keep the entire highway program from being hit by a wet and broad brush that would leave an over-all smear of graft and corruption.

On the whole, a BPR official claims, states are doing a noteworthy job of carrying out the program.

The bureau is just as eager to stamp out any malpractices that occur on the road program as anyone else. Taken in the concept of its magnitude, such incidents are not as frequent as is being painted, the BPR official claims. "If some graft didn't show up in a program of this size," he added, "we'd be paving with gold, and not on earth."

It doesn't mean that the bureau takes the congressional investigation lightly. But, it doesn't want any blanket labels pasted on it.

The cast of Director Blatnik's production

Chief Counsel Walter May

Rep. Gordon Scherer (R., Ohio)

Rep. William Cramer (R., Fla.)

Rep. James Wright (D., Texas)

Rep. Frank M. Clark (D., Pa.)

World's Fair Sparks Big Road Plans

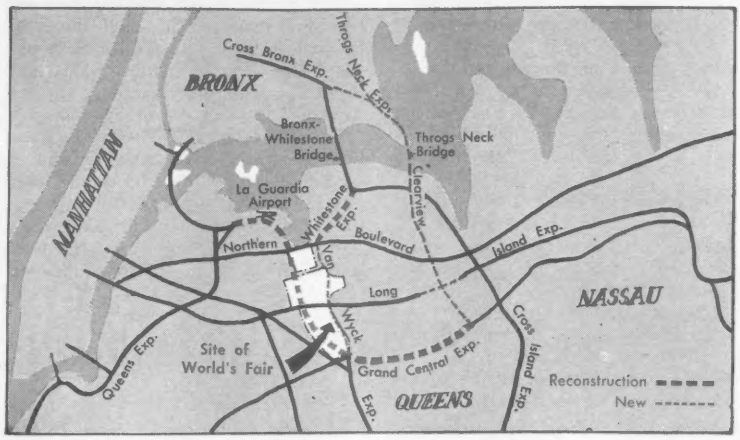
Selection of New York City's Flushing Meadows Park as the site of the 1964 World's Fair (ENR Nov. 5, 1959, p. 24) has set in motion a $94-million program of express highway construction and reconstruction. Forty million persons are expected to visit the fair during its first year.

Robert Moses, president of the World's Fair Corp. has announced plans for five major new or accelerated highway projects.

New are the widening of Grand Central Parkway and construction of an extension of Van Wyck Expressway. Grand Central will be widened from six lanes to eight between its intersection with the Brooklyn-Queens Expressway (west of LaGuardia Airport) and the Kew Gardens interchange, south of the fair site. From that point to its intersection with the Clearview Expressway, the parkway will be widened from four to six lanes. Also included is the reconstruction of four pedestrian bridges built for the 1939 World's Fair, also held at Flushing Meadows.

The Van Wyck Expressway will be extended along the eastern border of the fair site to a connection with the Whitestone Expressway. It will be a divided, six-lane road.

Accelerated are plans for the widening of the Whitestone Expressway, improvement of Northern Boulevard, and the construction of the southern section of the new Clearview Expressway.



New and rebuilt expressways will serve fair site.

Whitestone Parkway will be widened from four to eight lanes between the approaches to the Bronx-Whitestone Bridge and Northern Boulevard. A new four-lane fixed bridge will be built across the Flushing River, parallel to the existing four-lane bridge.

Northern Boulevard is to be rebuilt to provide express connections between the Whitestone Expressway, Grand Central Parkway and major highways to the west.

The southern end of the Clearview Expressway was scheduled for completion in 1965. The date of completion will be advanced to complete the circumferential route around the fair site in time for opening day.

Now under construction are the Throgs Neck Bridge, northern portion of Clearview Expressway and the Clearview-Long Island expressways interchange.

They are scheduled to be opened to traffic early next year.

Seven automobile parking fields are proposed for locations around the fair site. They have a total area of 140 acres and capacity of about 20,000 cars.

Bye Bye 'Buy American' for Road Jobs

The Department of Commerce has backed down again on the enforcement of a regulation that states must accept foreign materials, if they are cheap enough, for federal-aid highway construction.

The latest effective date of the order was May 1. But last week the Bureau of Public Roads announced that enforcement has been postponed indefinitely.

BPR says various states have raised enough legal questions about the order to throw it back into the study stage.

Observers in Washington predict that the issue will drown in a sea of legal and political maneuvering and the states will be permitted to make their own decisions on what to do about foreign steel, cement and asphalt for highway work.

The rule compelling purchase of imported highway materials is, confusingly, included in the Buy-American Act. When the act was imposed in 1933, there went into effect a 25% cost differential in favor of domestic materials for all federal projects. This meant that if foreign steel was offered for a project at $100,000, the same amount of domestic steel could sell for as high as $125,000 and still be low bid.

President Eisenhower changed the percentage by Executive Order in 1954, reducing the price differential to 6%. In areas of serious unemployment, it's 12%.

Although European and Japanese producers of steel and cement are paying the highest wages in their histories and have to pay the cost of shipping materials across the Atlantic or Pacific, they can still undersell many U. S. producers who have the 6% advantage. Some industrialists say the differential would have to go back to 25% before they could underbid foreign competitors.

At the time of the Highway Act of 1956, which provided for federal aid of 90% for Interstate highways and 50% for others, nothing was said about whether or not the program was subject to the Buy-American Act.

Until 1958, states decided for themselves whether or not to buy foreign materials. Then Texas notified BPR that it planned to ban imported steel for highway construction if the bureau agreed to it.

After the Department of Commerce, the Department of State and the White House conferred several times, BPR turned Texas down. The bureau then notified all states that they would have to abide by the Buy-American Act as of July 1, 1959.

This deadline was subsequently put off until December 31, 1959 and then to March 1. Pennsylvania's governor, two senators, one of its members of the House and a group of high-ranking state officials descended on Washington in February for a successful fight for a further postponement (ENR Mar. 10, p. 21). Commerce Secretary Frederick H. Mueller advanced the deadline to May 1, then. Now it's off the calendar.

Under Water by Rail

Channel study report for bored railway tunnels

Two parallel rail tunnels and a small service tunnel under the English Channel between France and England are recommended in a report published last week by the Channel Tunnel Study Group.

The report, the result of two and one-half years study by French, British and American consultants, endorses bored railway tunnels as the most realistic approach to the problem.

The governments of France and Great Britain received the report March 31 (ENR Mar. 31, p. 25).

The group is wary of trench tunnel construction, because of the difficulty of dredging a trench at depths as great as 260 ft in a sea that is often rough and frequently blanked out by fog. Although Texas towers could replace floating dredges, the sea would still make it difficult to tow out and place the tunnel segments.

A highway tunnel was rejected, because it would bring in insufficient revenue and pose an expensive ventilating problem. A road tunnel could move only 1,300 vehicles an hour in each direction, as compared with 1,800 vehicles, 4,200 passengers and a large volume of freight that could be carried in a rail tunnel.

A bridge over the channel was ruled out for financial reasons.

The $280-million rail tunnel would have two tubes of 23 ft 9 in. outer diameter with a 10 ft 9-in. service tube built between them. The report says one of the large tubes could be bored at 1,475 ft per month.

New Jersey Will Increase Highway Awards This Year

New Jersey will let $101 million in highway and bridge contracts this year, according to a delayed reported received too late to be included in ENR's roundup of state highway plans (Apr. 21, p. 34).

This is a 67% increase over actual awards last year.

Here is the detailed breakdown, in millions of dollars.

Type of Expenditure	1959	1960	% Change
Construction	$60.6	$101.0	+ 67
Interstate	23.4	47.0	+101
ABC	28.8	42.0	+ 46
State only (excl. toll)	8.4	12.0	+ 43
Maintenance			
By own forces	10.5	11.5	+ 10
By contract	1.0	1.3	+ 30
Machinery & Equipment	0.6	0.7	+ 17

Two More Titan Sites Chosen . . .

The Pentagon has selected sites for two more bases for the Titan intercontinental ballistic missiles—McConnell Air Force Base, Wichita, Kan., and Davis-Monthan Air Force Base, Tucson, Ariz.

Each of these will be double bases, built to accommodate two squadrons of 10 Titans each. Both McConnell AFB and Davis-Monthan AFB will have underground launching installations for 18 ICBMs. (A missile squadron has nine ICBMs in launching position and one spare.)

Construction costs for each base will be about $80 million. Contracts will be awarded later in the year.

This brings the Titan program to seven bases housing a total of 10 squadrons. The Air Force's schedule calls for four more squadrons, which will be set up one or two at a base.

The other five Titan bases are at Lowry AFB, Denver, Colo.; Ellsworth AFB, Rapid City, S. D.; Mountain Home AFB, Mountain Home, Idaho; Beale AFB, Marysville, Calif., and Larson AFB, Moses Lake, Wash.

. . . And Atlas Base Bids Opened

Western Contracting Corp., Sioux City, Iowa, submitted the apparent low bid of $17.4 million for construction of launching facilities for nine Atlas intercontinental ballistic missiles at Lincoln Air Force Base, Neb.

Eight companies competed for the work. The highest bid was $21.3 million. The government estimate was $18.4 million.

The bidding conditions permit the Pentagon to require the contractor to build launchers for three additional Atlas ICBMs.

This provision is part of the Defense Department plan to enlarge scheduled missile bases. It does away with delay in getting additional work under construction and insures that added launchers will be of the same design and construction as the original nine.

The unit price quoted in the original job would apply to extra work. The time limit on ordering it is 180 days. No specific plans for the enlargement of the Lincoln AFB ICBM base have been announced.

Launching installations will be completely underground, with each of the nine on individual sites. The 130-ton Atlas missiles will be housed in underground, reinforced concrete silos 175 ft deep and 55 ft in diameter. Fuel and liquid oxygen will be housed at the missile's base.

A two-story underground powerhouse and control station will be linked with the silo.

Completion date for the Nebraska ICBM work is May 25, 1961.

Texas Takes a First in Skyscrapers

Texas has beaten New York at its own game of setting skyscraper records. A Houston bank building tops a New York City office tower as the nation's tallest, all-welded, steel-framed building.

Both buildings rise 31 stories. But Houston's $22-million First City National Bank and Office Building, at 410-ft height, towers 25 ft above Manhattan's $20-million Western Electric Co. Building.

Both buildings, though still under construction, have been topped out: the Houston building last December, and the Manhattan building this month. There are 10,000 tons of structural steel in each building.

Drier Structural Steel Co., Inc., New York City fabricator, and erector of the Western Electric Building, estimates that 20 tons of welding-rod steel went into the field connections. Drier won its low-bid contract after submitting alternative bids on riveting, and high-strength bolting.

Major problem in the Western Electric Building was providing framing for eight building set-backs. They required offset girders to carry the staggered columns.

For the Houston building, architect is Skidmore, Owings, and Merrill of New York City. Wilson, Morris, Crain, and Anderson of Houston are associated architects. Robert J. Cummins, Houston consulting engineer, is the structural engineer; Paul Weidlinger, New York City, is the structural consultant.

Mosher Steel Co. furnished and fabricated the structural steel, which was erected by Peterson Bros. W. S. Bellows Construction Corp. is general contractor. All are from Houston.

For the Western Electric Building, Shreve, Lamb and Harmon Associates is architect; Purdy and Henderson, structural engineer. Drier Structural Steel Co., Inc., fabricated and erected the steel. George A. Fuller Co. is general contractor. All are from New York.

Both buildings are scheduled for occupancy in early 1961.

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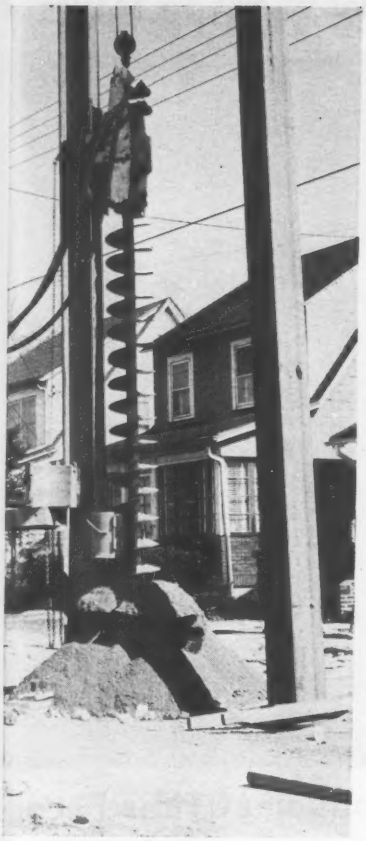
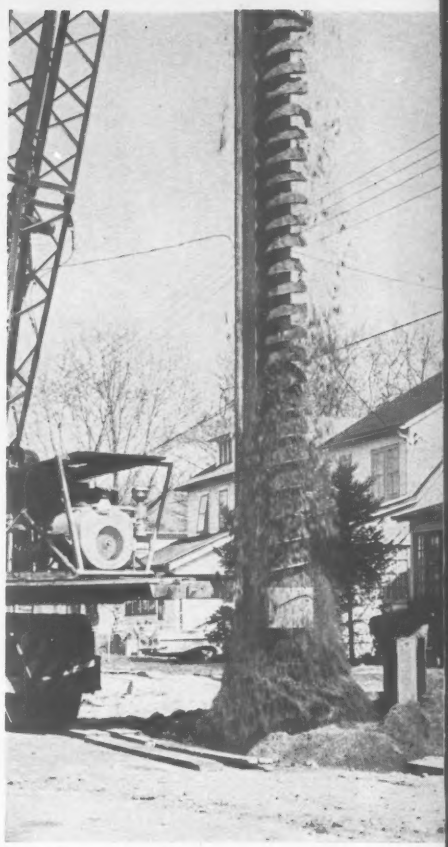


Auger sinks 48-ft hole, then . . .

H-beam is dropped in place.



Backfilling is quick and easy.

Preboring Sinks Piles the Quiet Way

Preboring for piles is now saving a New York City contractor money and sparing him complaints about noise—as it has done for builders in other parts of the country.

T&T Contracting Co., Brooklyn, is using the technique to sink 2,500 H-pile soldier beams 48 ft deep to support an open cut excavation for a sewer along a residential street in the city's Borough of Queens.

T&T's $5.5-million contract calls for cut-and-cover construction of 12,000 ft of twin tunnel, reinforced concrete trunk sewer.

In the sandy subsoil along the route, normal practice would be to drive the soldier beams with a pile driver, but T&T took a long, dim look at the prospects of driving the piles practically in the yards of the homes, apartments and churches on both sides of the street.

Most of the private residences are on 30-ft lots with shallow setbacks of as little as 10 ft off the curbline. The street is about 30 ft wide and the cut extends the entire width at most points.

Fully aware of the damage claims that would arise from cracked plaster, broken windows, leaky foundations and smashed sewer lines, the contractor decided to prebore for the soldier beams.

In conjunction with Reiley Equipment Co., Woodside, N. Y., T&T engineers assembled a dual purpose preboring and pile-installing rig, built around a truck crane with a 60-ft boom.

A 48-ft H-beam lead is hinged from the top of the boom. An 18-in. earth auger, 48 ft long, driven by a 34-hp hydraulic motor rides on the lead.

The gasoline-driven hydraulic pump is mounted on an A-frame at the base of the boom, making for a self-contained mobile rig. A boot-like sleeve with a flared top, mounted at the base of the lead, spills the spoil away from the hole as the auger bores.

Soldier beams are installed in the following manner:

The rig centers the auger bit over the spot while a stubby, 10-ft jib holds the H-pile in readiness a few feet away. The hole is bored and the auger withdrawn, taking care not to shake the sand from the flights (this will be used for backfilling). The auger is then shifted about 2 ft to one side.

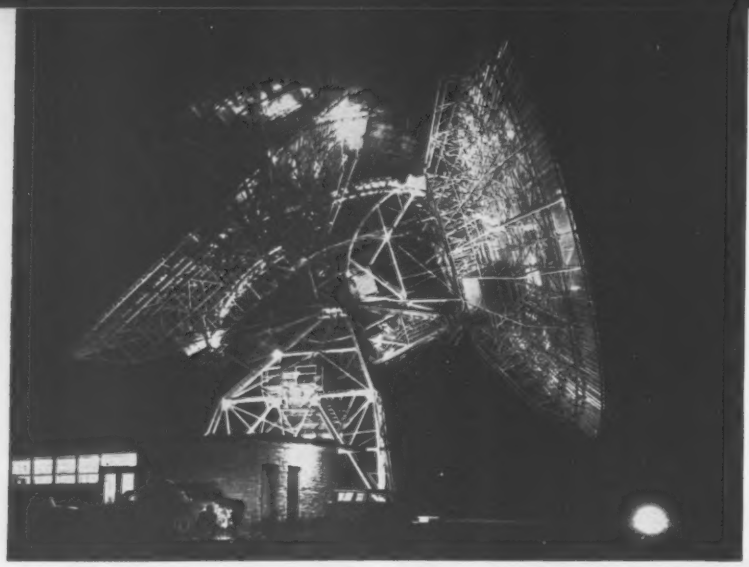
Using the jib on the same boom, the soldier beam is positioned and dropped into place. Beam tops are evened later with a drop hammer.

T&T is logging 14 to 16 noiseless piles a day and sees an even faster pace barring union objections.

Besides noise abatement and speed, the contractor claims several other advantages for preboring. The piles are like new after removal, making possible complete recovery and reuse of the steel.

Sewer line breakage is signaled immediately when the auger brings broken tile to the surface. The severed soil line is not blocked by the bore, as it could be by a driven pile and the freshly backfilled hole forms an emergency cesspool until a bypass can be installed.

Legal expenses, often substantial on urban pile driving jobs, have been all but eliminated.



Once Around the Axis

A time exposure provided this dramatic picture of an 85-ft-dia radio telescope in operation at the National Radio Observatory, Green Bank, W. Va. The telescope's axis is parallel to the axis of the earth and turns at a constant rate of speed—one revolution per day. It tracks celestial objects by following a discrete radio noise source. Surface accuracy of the solid aluminum reflector is within an average error of about $\frac{1}{8}$ in. The reflector can be aimed at a region of the sky with an error of about 30 seconds of arc. Blaw-Knox Co., Pittsburgh, designed and fabricated the structure.

Tires Become

Old auto tires combined with layers of plywood form an unusual "crash cushion" on the roof of a building in

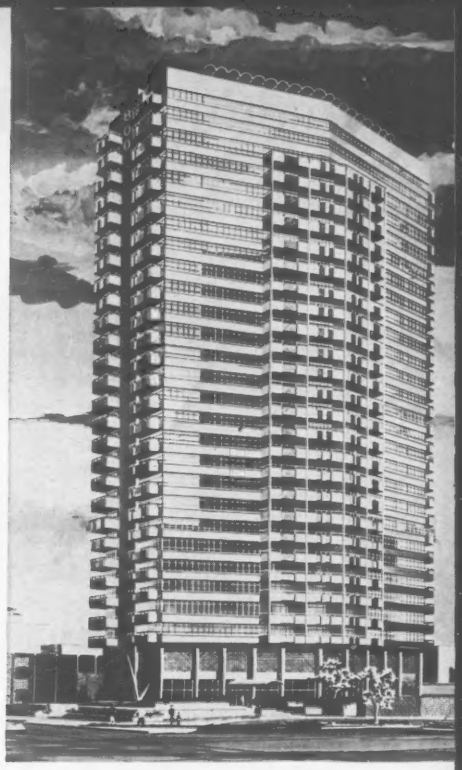
$5-Million Church Ready

A spectacular series of looping arches mark Our Lady of Grace Church at Higuey, Dominican Republic. The impressive basilica, which towers 246 ft above the ground, cost $5 million to construct. It is considered the most modern church on the American continent.

Pictures of the Week

Mattress on Demolition Project

Rochester, N. Y. The puncture-proof mattress protects the roof from the debris of a demolition job under way on a taller adjoining tower. Although the mattress works well, there are holes —hubcaps might help.



Apartment for Louisville

The Federal Housing Authority has approved a $5-million loan for construction of this $6-million, 29-story apartment building in Louisville, Ky. At 260 ft, it will be Louisville's tallest building. Architect-engineer is the Louisville firm of Arrasmith & Taylor. Loewenbery & Loewenberg of Chicago are associate architects. The building is flat-plate reinforced concrete construction with shearing wall wind bracing.

Cantilever Makes a Motel in an Airport Parking Lot

This component-built structure at Washington's International Airport will provide 18 compartments for short waits. It was designed by Louis K. Shostak of San Francisco to be erected anywhere space is at a premium. Put up in a parking lot, for example, it would displace only two cars. Each room has a desk, bed, toilet and shower. Assembled on the ground at the site, the frame and the cellular metal deck are placed in one piece, ready for walls and roof. Walls themselves carry the roof; there's no frame above the deck. Exterior panels are faced with porcelain-coated steel, 3⅜ in. thick. Polyurethane foam fills the cores. Roof panels are foam-filled, like the walls, but with a galvanized steel top sheet. At ground level, the four steel columns will be enclosed to form a lobby.

Meeting Spotlights Biologic Treatment

Biological advances in treating sewage and industrial wastes got the concentrated attention of several hundred U.S. and foreign engineers in New York City last week. Some 450 engineering and public health experts gathered at Manhattan College for three days of technical discussions under the auspices of the school's civil engineering department.

In 13 sessions, the conferees heard 45 papers, of which one-fifth were by engineers from England, Germany, Japan, The Netherlands and Sweden.

The papers covered two general topics: biological oxidation and oxygen transfer.

The relative worth of batch-fed versus continuous oxidation systems for test purposes was touched on by several speakers. Roy F. Weston and Vernon T. Stack, Jr., of Roy F. Weston, Inc., attributed the main attraction of laboratory-scale batch-fed tests to the speed with which fundamental information can be obtained.

This despite the fact that such studies are subject not only to the inherent difficulties of any biological oxidation process, but also to the added complexities resulting from large surface-to-volume ratios, small quantities, and magnification effects of the slug feeding on toxicity and certain other undesirable factors.

Continuous system performance that can be predicted from batch data, according to Weston and Stack, include initial removal of biochemical oxygen demand (BOD), sludge production, oxygen consumption and efficiency of BOD removal.

H. E. Orford, H. Heukelekian and E. Isenberg, of the New Jersey Agricultural Station at Rutgers University, reported on laboratory studies of a number of factors affecting activated sludge performance. Among their findings: Heat sterilization of sewage does not seriously affect test results; sludge density index reaches a maximum at a sludge loading of 0.17 lb of BOD per day per lb of volatile solids under aeration; sludge density index increases only slightly with increasing levels of dissolved oxygen in the mixed liquor; nitrate in the effluent increases significantly with increasing sewage ammonia content and dissolved oxygen in the mixed liquor, but decreases as the sludge loading increases; activated sludge solids production increases with increasing sludge loading.

Analyses of secondary effluents from a number of sources were described by R. L. Bunch, E. F. Bart and M. B. Ettinger, of the U.S. Public Health Service's Taft Center. The tests included measures to overcome a major difficulty—the determination of soluble organic constituents. The materials occur in individually low concentrations and make it necessary to concentrate the effluent without changing its nature. By filtration and evaporation in a special evaporator at the Taft Center, the effluents studied were concentrated twenty-fold as a first step toward subsequent analysis of the constituents by conventional means.

Behind such tests, the engineers indicated, is the possible need eventually for tertiary sewage treatment as multiple re-use of surface water becomes more common.

Such treatment, they said, might embrace present techniques but, to handle the elusive new organics, would probably also incorporate methods not yet developed.

A. Pasveer, of the Netherlands Research Institute of Public Health Engineering, reported on the performance of oxidation ditches developed during research into small sewage treatment plants for villages, industries and dairies unable to afford conventional treatment.

The method developed is a single oxygenation process, carried out usually in a ring-shaped earth ditch. A rotor mounted in the ditch aerates and circulates the sewage.

Both a clear effluent and sludge are withdrawn regularly, but sludge withdrawals do not start until solids content in the mixed liquor attains a high level. Solids concentration in the mixed liquor ranges from 10 to 30 times that in activated sludge aeration tanks. The heavy concentration renders the process insensitive to peak BOD loads, Mr. Pasveer said.

Power requirements for aerating the sewage are high, he stated, but they offset only a small fraction of the saving in capital cost.

Excess sludge is removed in two ways in the plants built so far: by separation in a sedimentation trap in the ditch and subsequent pumping to drying beds; or by sedimentation from mixed liquor pumped to the drying beds. Effluent resulting from the latter method is returned to the oxidation ditch.

Nelson L. Nemerow, of Syracuse University, reported findings from a year of oxidation pond pilot plant studies at Syracuse. Test facilities include five concrete test basins 15x4 ft in plan and from 2 to 8 ft deep.

Among the conclusions: Suspended solids removals are similar to those in primary settling basins; environment has more effect than BOD loading on BOD removal efficiency; basin efficiencies increased with depth and detention time throughout most of the year; the deepest tank (8 ft) performed most efficiently.

Two unusual features of the conference were aimed at stimulating discussion on the floor: Papers were preprinted and distributed in advance to the registrants; and abstracts of the papers were incorporated in the printed program.

Pay Raise for U.S. Employees?

Engineers are urging congressional committees to do something for hard-to-get and hard-to-hold categories of government professional employees in any pay-raise legislation they may write.

Just two years after the 10% general pay increase voted in 1958, the House and Senate committees on Post Office and Civil Service are again holding hearings on a raft of bills that propose another step-up across the board.

The Administration is dead set against a broadside pay boost this year. President Eisenhower promises to veto any bill that authorizes a general increase in the old pattern.

But sentiment in favor of a pay increase is building up in Congress. Sen. Lyndon Johnson has said that he is for it. And most of the 25 members of the House committee are committed to a pay raise bill.

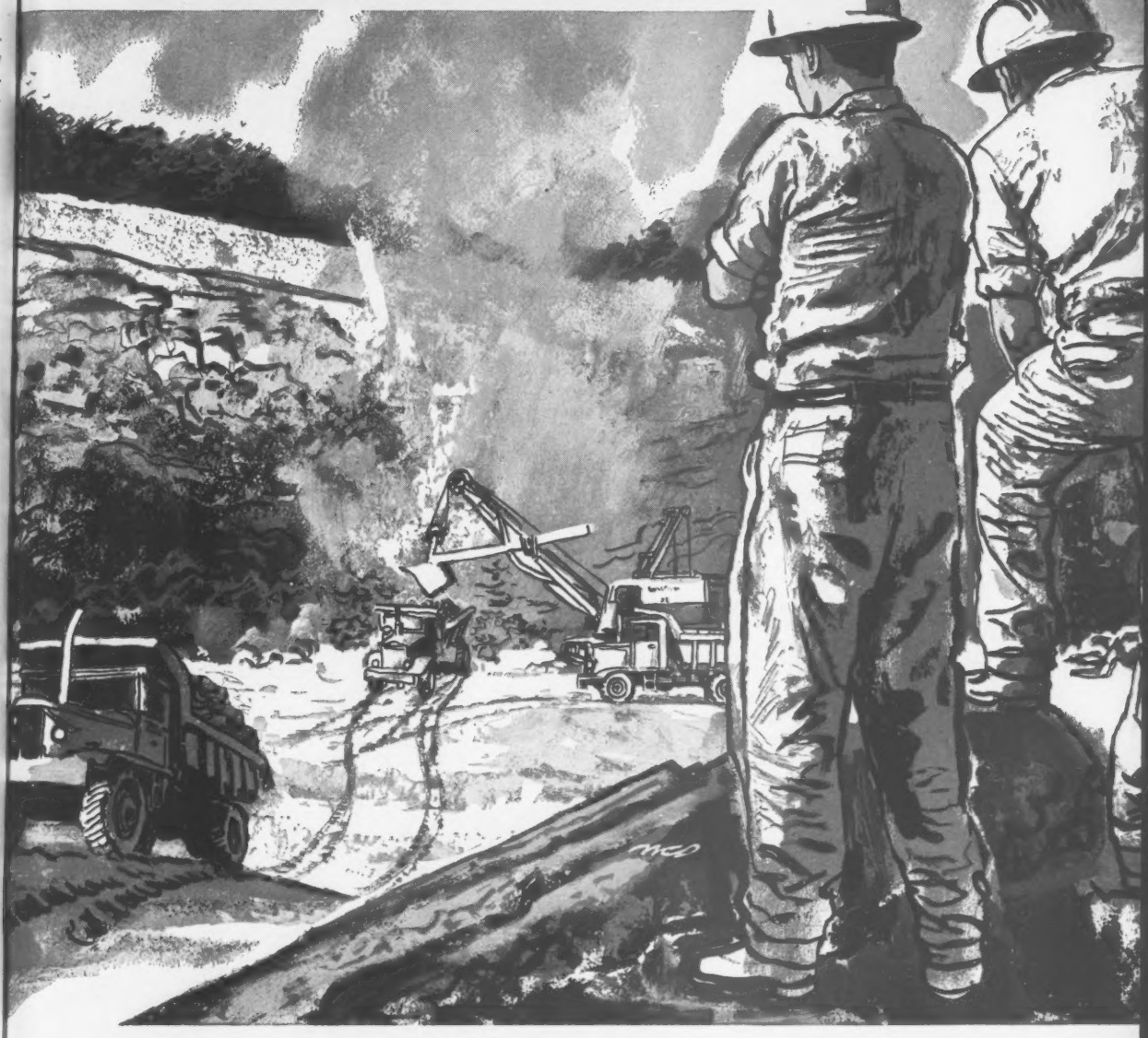
The House group has been holding hearings since March 15. Senate hearings will begin this week.

Still to be decided is the form the bill will take. Budget Director Maurice Stans and other Administration witnesses last week singled out for attack a House bill that would increase postal employees 23% and classified employees, including engineers, 12½%. Committee members later intimated the boost might be trimmed to 7% or so across the board.

Even on this basis, the legislation would invite a sure veto at the White House.

Spokesmen for engineers and scientists advocate one of two proposals: The first amounts to a separate pay schedule for engineers similar to the government's old and discarded professional schedule; the second proposes a flexible pay plan that would give agency heads broad latitude in adjusting salaries to recruit high-quality personnel and to maintain experienced professionals at a level with private industry.

How **protection in depth** helps cut compensation costs



Had any accidents down on the floor lately?

Working a deep cut can be hazardous business. Noise and congestion team up to cause bodily injuries and raise your insurance rates. Liberty Mutual engineers are experienced in studying work sites and setting up traffic patterns. They know machines and they know men, and they can help you safeguard both to improve your odds against accidents and losses. This safety engineering is but one of the many Liberty Mutual services that add up to protection in depth. To learn more about Liberty's protection in depth and how it can help lower your business insurance costs, contact your nearest Liberty Mutual office.

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POWER...

is the time rate of doing work. The more of it you use, the more time you save.

TIME...

is money in your pocket when you save it, money thrown away when you waste it.

MONEY...

is what keeps you in business. It costs money to buy power, but it can be a money-saving investment.

Big Power for Pushing Scrapers

By Leo J. Ritter, Jr.

Emphasis in earthmoving these days is on greater production, larger machines, more power. Objective: lower cost per yard of dirt moved.

There is striking use of large amounts of power to load rubber-tired scrapers. Contractors are using high-powered crawler and rubber-tired pushers—both singly and in tandem—to obtain heaping loads in surprisingly short loading times.

*ENR's **Jack Ritter** has been watching, teaching and writing about highway construction for 20 years. Ritter and Paquette's "Highway Engineering" is a standard work in the field.*

On a large-scale dam project, the contractor teamed two twin-engine crawlers with a twin-engine scraper, had more than 1,400-hp available for the fast loading of 27-cu-yd units. On a road job in Colorado—under ideal conditions—an operator consistently filled a 20-cu-yd scraper in less than 30 seconds using a 600-hp rubber-tired dozer. Even triple pushing of a large scraper has been reported.

Obviously, increased power for pushing is more profitable under certain conditions.

The most profitable method for any job can be based only on analysis of that particular project. And, fortunately, tools are available which, if properly used, can lead to a definite, cost-based decision on the best method for the given job.

Basic approach is a systematic analysis of the scraper cycle, with determination of the cost per cubic yard under existing or anticipated conditions as the end result.

Cost analysis can help the contractor in making these decisions either for estimating purposes or for job control:

1. Matching pushers and scrapers, both as to size and number of pushers.
2. Choice of single or tandem pushing.
3. Planning and control of the pit

A. Medium vs. big single pushers

	225 hp Pusher	320 hp Pusher
Load, cu yds	18.0	20.0
Load time, min	1.0	0.75
Haul, dump and return, min	5.00	5.20
Total cycle, min	6.00	5.95
Hourly production, cu yd per scraper (50-min hour)	150	168
Pusher cycle, min	1.75	1.50
Scrapers loaded per hr	34.3	40.0
Maximum pusher production, cu yd	617	800
Hourly cost of spread	$125	$130
Hourly production of spread, cu yd	600	672
Cost per cu yd	$ 0.208	$ 0.193

B. Medium single vs. medium tandem

	200-hp Single Pusher	200-hp Tandem Pushers
Load, cu yd	16.7	20.2
Load time, min	0.65	0.61
Scraper cycle, min	5.00	5.00
Hourly production, cu yd per scraper (50-min hour)	148	180
Pusher cycle, min	1.05	1.01
Number of scrapers handled by pusher	5	5
Hourly production of spread, cu yd	739	900
Hourly cost of spread	$165	$180
Cost per cu yd	$ 0.224	$ 0.200

How it Can Make Money for You

operation—the pattern of loading followed by pushers and scrapers.

4. Overall production control for the most profitable operation.

Achieving a balanced relationship between pushers and scrapers is a function of the scraper and pusher cycle times and costs.

A fundamental relationship is that the number of scrapers handled by a single pusher equals scraper cycle time divided by pusher cycle time.

Many factors affect both the scraper cycle time and the pusher cycle time. Important variables are pusher size and speed, scraper size and performance characteristics, length of scraper haul, grade resistance, haul road conditions, loading pattern, and others.

It is apparent, however, that reducing time spent in loading will make it possible for a pusher to handle more scrapers in a given time and thus increase production.

The other side of the problem is pusher cost. If the same pusher can handle more scrapers—with no increase in cost—production costs will be lower.

Choice of a larger single pusher or tandem pushing is dependent upon the relationship between loading times and the entire scraper cycle, expressed in terms of cost.

Table A is an example of the type of analysis that can be made to compare two different pushers, to be used singly. The comparison is based upon each pusher handling four scrapers.

Actually, the smaller pusher will have to hump to handle four scrapers, while the larger pusher should handle them at a normal work pace. If the smaller pusher handled only three scrapers, production costs would go up sharply.

If pushers used singly can save both money and time, how about use of tandem pushers for cutting loading times and increasing loads? Impact upon costs of tandem pushing by dozers in the 200-hp class loading medium-sized (15-20 yd) scrapers is shown in Table B **on p. 30.**

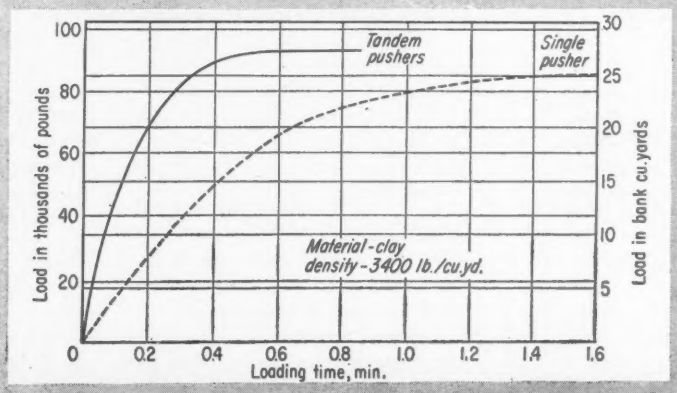
The production—and cost—advantage of tandem pushing is shown clearly. Proponents of tandem pushing also point out that, with two pushers, production is not dependent on a single machine. During waiting periods, one pusher might economically carry out other tasks, too.

It is in the range of the big machines—tractors of 300-hp and up, and scrapers of 24 cu yd and up—that the use of large amounts of power for pushing shows to best advantage.

This fact is sharply evident in the load-growth curves of Chart C, which compare single and tandem 320-hp pushers. Working in dense, heavy clay, and with the same scraper, the single pusher loaded 80,000 lb of payload in about one minute; further time spent in loading probably would be unprofitable, except for a very long haul.

The twin pushers, in contrast,

C. Load-growth curves



Big tandem pushers and big scraper add up to more than 1,000 hp.

Single big rubber-tired pusher and scraper have over 900 rated hp available for loading.

achieved a payload of more than 90,000 lb in an economical loading time of about 30 seconds. Economy of operation, of course, can not be judged solely on loading performance, but it is a strong indication.

When you get into the really big machines, analysis of the production cycle and corresponding costs can result in the comparison of Table D.

The table shows that tandem pushing provides 14% greater production per scraper at 11% less per cu yd.

Expressed another way, for every 100,000 cu yd of dirt moved, the contractor would save about $1,400 (100,000 × $0.014).

He also would save six 10-hr working days in moving this 100,000 cu yd as a result of the greater hourly production per unit with tandem pushers. The contractor would obtain these bonuses by changing nothing except the method of pushloading.

Still another possible choice is a high-powered rubber-tired pusher. Sample figures for production with a 600-hp machine of this type, under suitable tractive conditions, are shown in Table E.

If the pusher can handle six scrapers —which is quite possible under favorable conditions with a 5-min scraper cycle—cost per yard would be reduced.

Still another chance for profitable scraper loading lies in the planning of pit operations, the sequence used in loading scraper units.

Where a single pusher is used, three different pusher cycles are in common use. These are back-track, chain (or step) and shuttle loading. These maneuvers are shown in the drawing.

Typical job performance data for the different loading plans are given in

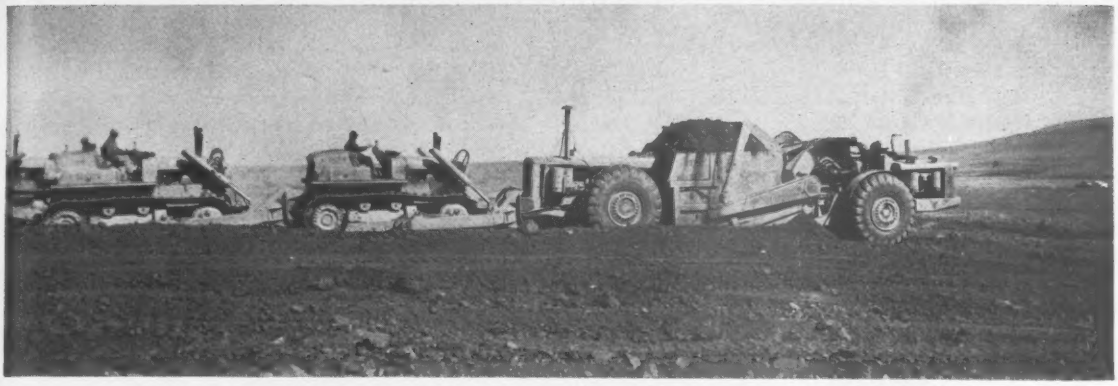
D. Big single vs. Big tandem

	Single Pusher 320-hp	Tandem Pushers 320-hp
Load, cu yd	23.3	24.1
Load time, min	1.28	0.53
Scraper cycle time, min	6.81	6.16
Pusher cycle time, min	2.14	0.94
Trips per hour	8.8	9.7
Hourly production, cu yd per scraper (60-min hour)	205	234
Scrapers required	3	6
Hourly production of spread, cu yd	615	1,414
Hourly cost of spread	$ 71.67	$144.72
Cost per cu yd	$ 0.117	$ 0.103

E. Big rubber-tired pusher

	Single 600-hp Rubber-tired Pusher
Load, cu yd	24.3
Load time, min	0.50
Scraper cycle, min	5.00
Hourly production, cu yd per scraper (50-min hour)	243
Number of scrapers handled by pusher	5
Hourly production of spread, cu yd	1,215
Hourly cost of spread	$151
Cost per cu yd	$ 0.124

Single pusher and medium-sized scraper combined have about 500 rated hp.



Twin-enginee crawlers and twin-engine scraper add up to more than 1,400 rated hp.

Table F. They are applicable to crawler tractors with a power range from 100 to 175 drawbar hp loading 10-15 cu yd scrapers. Althought this power range is somewhat low for current operations, the tabulated values are useful for comparing the loading plans. Similar data can be developed for any pusher and scraper combination.

Advantage of chain or shuttle loading over back-track loading is obvious.

A profitable pattern of tandem pusher usage is continuous loading, which is possible when an empty scraper can be in the cut at all times.

When an empty scraper enters the cut, contact is made by a single pusher while the second pusher is giving a high speed kick out to the last loaded scraper leaving the cut. Following this, the second pusher joins with the first to top out the scraper being loaded. As the scraper operator raises the bowl, the rear pusher drops off to start loading of the next scraper to enter the cut. The cycle is then repeated.

When continuous loading can be done, Table G shows typical costs.

This cost is in direct comparison with the previously tabulated figure of $0.20 per yd (Table B), with the same equipment, but with conventional tandem pushing.

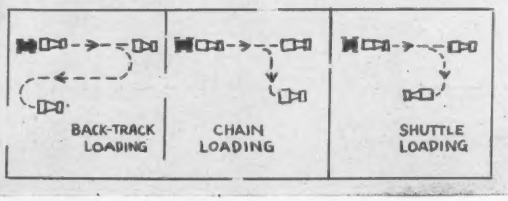
Applications of large amounts of power to push loading are most likely to be profitable when these conditions exist, in combination or singly:

- Large scrapers
- Long hauls
- Hard-to-dig materials

Tandem pushers fit well into many fleet operations, because of the availability of single units to perform individual or team functions as best suited to job conditions.

F. Comparing loading plans

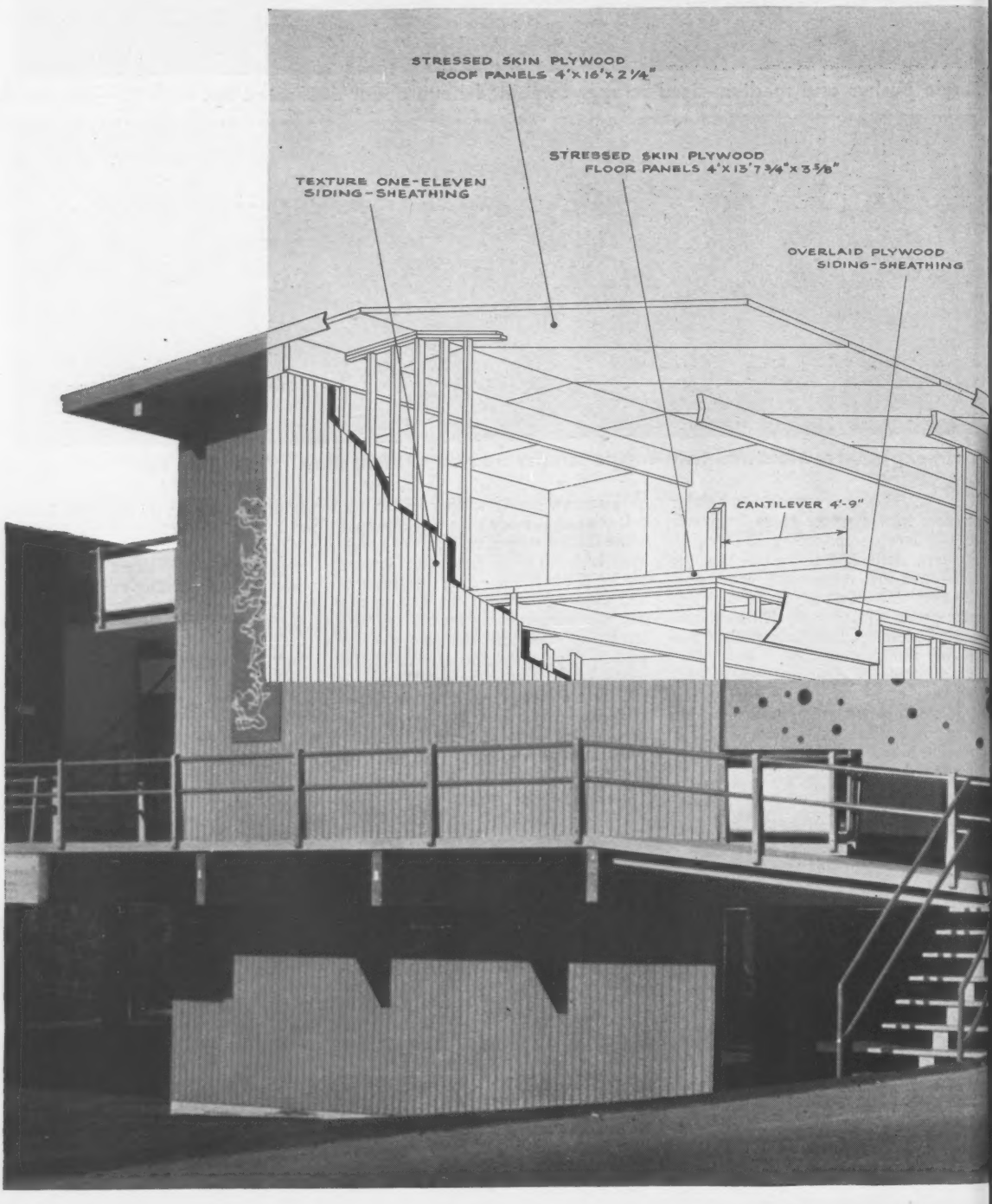
Conditions	Back-track Loading	Chain or Shuttle Loading
	Time, min.	
Favorable	1.45	1.05
Average	2.1	1.4
Unfavorable	2.7	1.8



G. Continuous loading

	Tandem Pushers, 200 hp Continuous Loading
Load, cu yd	23.0
Load time, min	1.08
Scraper cycle, min	5.00
Hourly production, cu yd per scraper (50-min hour)	188.9
Pusher cycle, min	1.08
Number of scrapers handled by pusher	5
Hourly production of spread, cu yd	944
Hourly cost of spread	$180
Cost per cu yd	$ 0.19

Fir plywood components and cut over-all costs 15%



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Plywood
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"Sturd-i-wall" construction on 26-unit apartment

Two relatively new time-saving techniques keyed to the use of fir plywood were credited with saving $16,000 on this apartment project. It cost some 15% less than comparable construction using other materials.

Stressed skin plywood components cut labor 75% compared with conventional roofing and flooring methods. Precisely engineered and factory fabricated under controlled conditions, panels had fir plywood top and bottom skins pressure glued to light lumber framing, with insulation sandwiched inside. Used at all three levels, they provided ceiling and underlayment or ceiling and roof decking in one unit.

Plywood stressed skin components like these offer maximum strength with minimum bulk. Their use is growing on buildings of this size and larger, for structural superiority and sharp reductions in on-site labor —in some cases as much as 85%.

"Sturd-i-wall" construction (one layer of plywood as combined siding-sheathing) was the other cost cutter, saving an estimated 15% on wall costs. Texture One-Eleven® (vertically grooved) plywood and medium density overlaid plywood were nailed directly to studs. The Sturd-i-wall system has proved its strength and economy in home building. As seen here, it offers comparable advantages in larger projects as well.

For more information about fir plywood, write (USA only):

DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control

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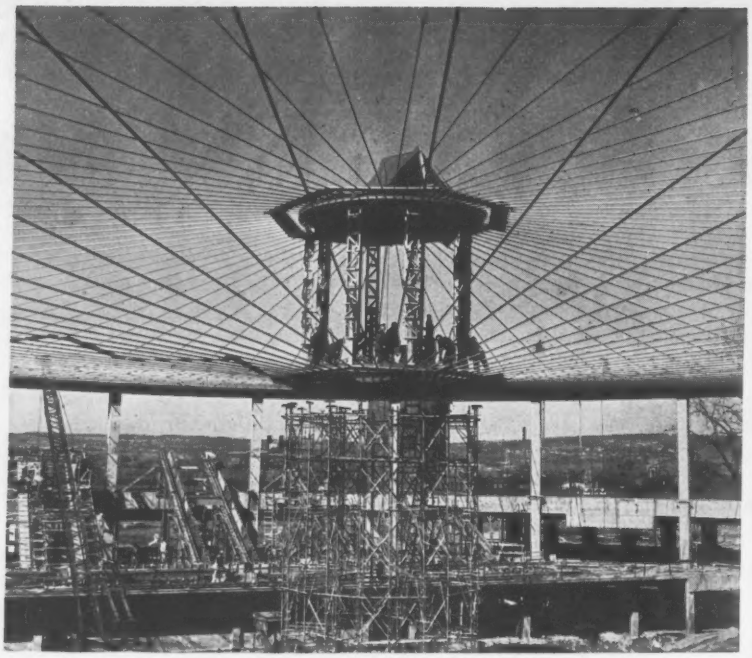
Texture One-Eleven nailed to studs made a stronger, more rigid wall than one with conventional sheathing and siding—in half the time.

TILLICUM APARTMENTS
LOCATION: Winslow, Wash.
ARCHITECTS: McCool & Morgan, Seattle
CONTRACTOR & OWNER: Edmund Stafford, Winslow
COMPONENT FABRICATORS: Panelbild, Lynnwood, Wash.



Workmen remove cribbing . . . Before jacking steel rings apart to pretension cables.

Prestressing Stabilizes Unusual Cab

The $4-million municipal auditorium just opened in Utica, N. Y., may be a prototype for long-span buildings of the future.

A unique dual cable system solves the problem of vibration inherent in this type of framing. It spans the 240-ft-dia of the circular building. Pretensioned to varying natural frequencies of vibration under all loading conditions, the connected cables build self-damping right into the system. The system was designed by Lev Zetlin, New York City consulting engineer.

The cable arrangement looks like a giant bicycle wheel laid flat. The wheel's hub is formed by two inner steel tension rings, separated by pipe spreaders; the spokes are seventy-two pairs of cables, 5 deg apart; and the rim is a concrete compression ring, supported on 24 concrete columns spaced at 15 deg around the perimeter. More in appearance than in design, it resembles the 302-ft-span cable roof of the U. S. Pavilion at the Brussels World's Fair (ENR Sept. 26, 1957, p. 36).

Vibration in cables arises from lack of flexural rigidity. Rigid frame-works can store strain energy, dissipating it as an internal friction and heat energy. But cables have no internal damping capacity. Their vibration must be damped through external means, as in bracing cables and stiffening trusses of suspension bridges.

Failure to provide effective external damping for cable structures can result in catastrophes like the famous "Galloping Gertie" Tacoma Narrows failure (ENR Nov. 14, 1940, p. 1). Wind-induced oscillations, matching the natural frequency of the slender structure, sent it writhing in tremendous amplitudes that finally plunged the suspended roadway into the waters of Puget Sound.

A simple illustration of resonance (i.e., the coincidence between frequency of impressed forces and natural frequency) is the technique of shaking a sapling down: you time each push to coincide with the sapling's natural vibration frequency. The vibration amplitude increases until the trunk finally cracks.

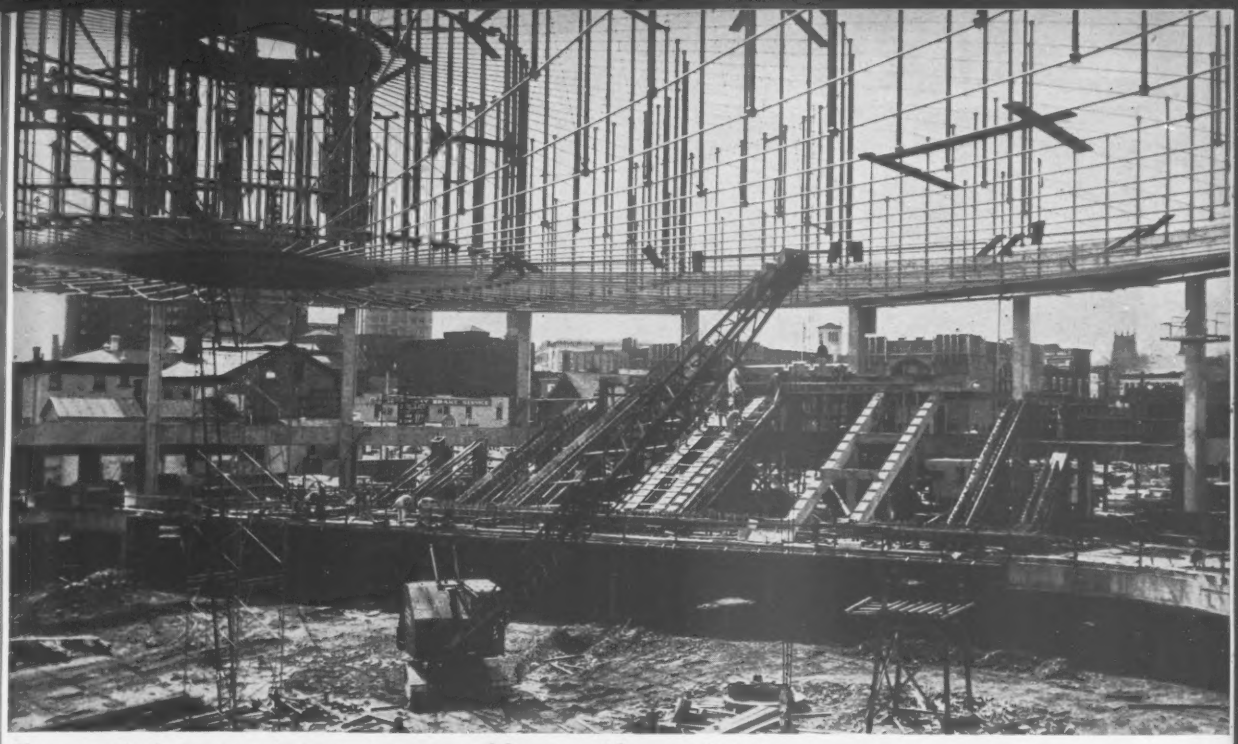
The engineer prevented flutter resulting from resonance in the Utica auditorium roof cables by specifying varying prestress for upper and lower cables. This results in different natural frequencies for upper and lower cables. Vertical pipe struts are inserted between the paired cables in a pattern of concentric circles spaced about 14 ft apart. The pipes connect the cables into structural units. Vibration in one cable is always out of phase with vibration in the other. And so the opposing inertial forces damp vibration in the system.

Prestressing the cables, in addition to damping vibration, also controls deflection. Both cables remain tensioned under all loading conditions. The 1⅝-in.-dia upper cables are pretensioned to 135 kips; the 2-in.-dia lower cables to 175 kips. Creep in the concrete compression ring will eventually reduce these forces by about 10%. Under full dead load, upper cables lose 15 kips tension. Lower cables therefore gain 15 kips tension, for there is no change in applied horizontal force. Live load produces approximately the same change in tension forces as dead load.

Maximum cable stress under any loading condition—including prestress—is 65,000 psi. Strands have a strength of 225,000 psi; yield point, 160,000 psi. Cables were prestretched in the fabrication plant to stabilize the modulus of elasticity at 24 million psi.

Erecting the roof structure required unusual techniques and coordinated efforts by John A. Roebling's Sons, cable fabricators and erectors, Trenton, N. J., and General Sovereign Construction Co., Ltd., general contractor, Fort Lee, N. J.

After concrete crews cast the 2-ft-sq concrete columns at the building's perimeter, carpenters formed the concrete compression ring, working on scaffolds 30 ft high. Pairs of pipe sleeves for anchoring the cables were set into the form of the massive compression ring, which has a cross-section area of about 20 sq ft. Concrete (5,000 psi



Then, vertical struts go between upper and lower cables as vibration dampers.

Cable Roof

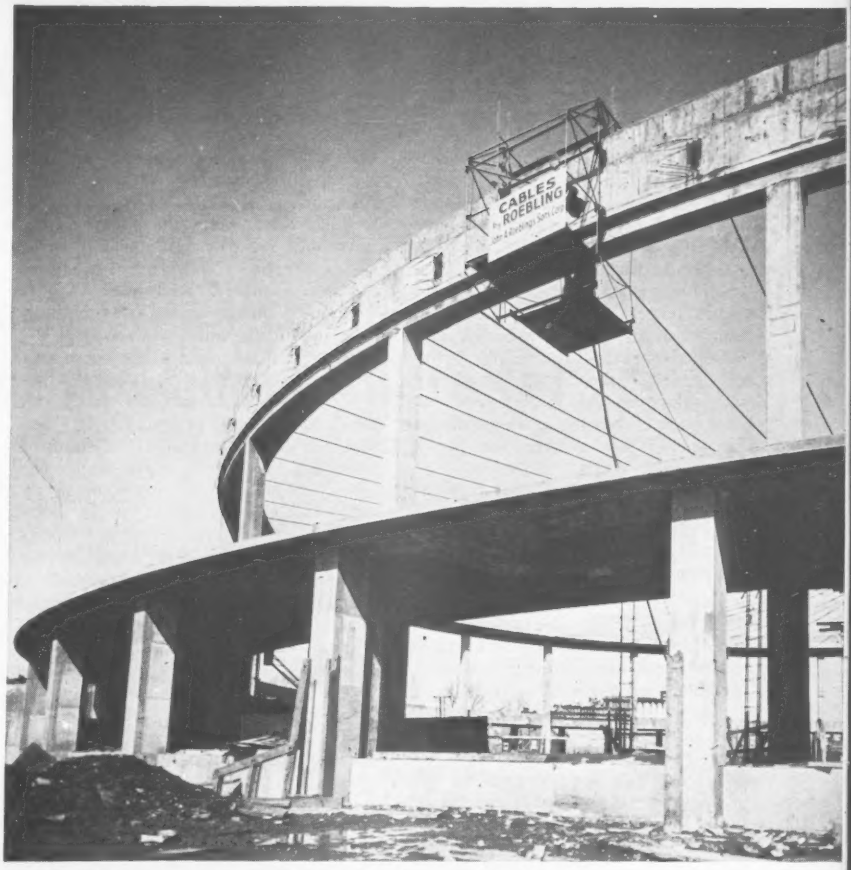
strength) went into the forms in 60-ft-long pours.

Meanwhile workmen erected a steel pipe scaffold tower at the center of the building. Two cranes hoisted the two welded steel tension rings and set them on timber blocking built about 6 ft above the top of the scaffold tower. Hydraulic jacks went between the rings.

Next came the most critical phase of the erection sequence—cable stringing. The engineer designed the compression ring primarily for uniformly-distributed loading. To avoid placing excessive bending stress in the ring, he specified a cable-erection plan based on influence-line diagrams (combinations of diagrams showing variation in stress at any given point as the tensile force of one cable moved around the ring).

After all cables had been connected to inner and outer rings, wood blocking was pulled out from under the lower tension ring. The upper and lower rings were forced apart simultaneously by eight double-acting jacks spaced at 45 deg around the platform. When the upper and lower rings were 18 ft apart, the cables had attained about 80% of the specified prestress. Roebling's men then inserted permanent 5-in.-dia pipe sections between the rings and removed the jacks.

The remaining 20% prestressing force was attained with the installation of pipe struts between upper and lower



Final cable tuning is done from rolling scaffold.

Brick-walled auditorium will seat 6,500 in column-free interior.

cables. These specially fabricated sections have hinged saddles at top and bottom to equalize cable tension on each side of the strut. Measurements taken after workmen had placed the 504 struts showed final pretension generally within 5% of the specified stress. Workmen on a rolling scaffold at the perimeter compression ring made the final prestressing adjustment with jacks.

Roebling prefabricated the cables to a ¼-in.-length tolerance. Cable anchorages at the perimeter are standard lead-filled sockets threaded to turn a bolt against a washer plate at the outside surface of the compression ring. Block sockets, bearing against stiffening ribs, anchor the cables at the two interior tension rings.

Light-gage steel deck roof spans circumferentially between the upper cables. Intermediate 6-in. channel purlins are required along the outer 22 ft of the roof diameter to shorten the span between cables. Diagonal rod X-bridging between struts distributes concentrated loads of mechanical equipment and prevents local cable distortion.

Cable prestressing created a design problem in the interaction between exterior concrete columns and the exterior concrete ring. Cable tensioning produced an elastic shortening of the compression ring. Concrete creep will continue this contraction several months. And as the compression ring contracts, the concrete columns deflect laterally.

Mr. Zetlin kept the columns as flexible as possible to reduce column bending moments. By postponing construction of the concrete seat framing until after the cable tensioning operation, he made the unsupported column height 30 ft, instead of 15 ft, during tensioning. This cut column stiffness to half the value they would have with the seat framing in place.

Mr. Zetlin also specified a lower strength concrete (3,750 psi) for the columns. This reduced the columns' modulus of elasticity below that of the compression ring and made them proportionally more flexible.

Columns were designed only for bending moments produced by the initial elastic contraction of the compression ring. Creep in the columns will simultaneously accompany creep in the ring without increase in stress. Steel columns were ruled out of the design because the continuing creep of the compression ring would have increased their bending stress, eventually to about three times the initial value.

Another prestressed cable roof designed by Mr. Zetlin—a preliminary study for a grandstand roof—converts the pretensioning force from a problem into a solution. In this design, pretension forces around the perimeter balance the overturning loads of giant C-shaped grandstand sections.

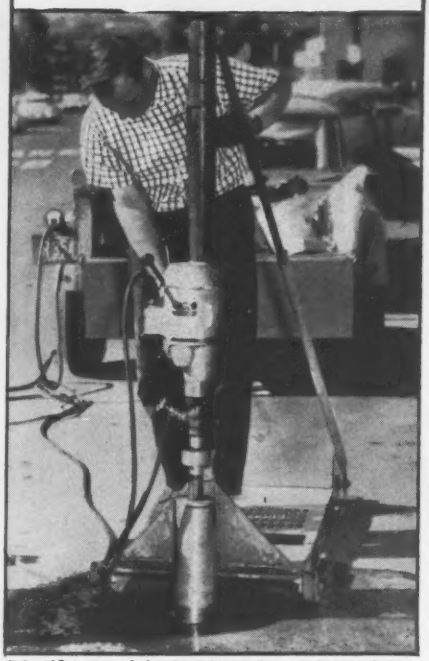
Mr. Zetlin's studies show greater economies for the dual-cable system for longer spans. Estimates of cost per sq ft of roof actually decrease with increasing spans over 200 ft. Cost of cables, anchorage sockets and erection are the three major cost elements. Cable cost, which is about 20% of the total, increases with the span length. But the socket and erection costs remain almost constant. Thus the unit cost of the dual cable system decreases up to about 1,800 ft span, the practical limit for erecting a cable roof.

The engineer specified high-strength reinforcement—conforming to ASTM Designation A432—for all reinforced concrete in the auditorium. This steel has a minimum yield point of 60,000 psi. At a working stress of 30,000 psi, the A432 steel will deform about 50% more than intermediate steel at its working stress of about 20,000 psi—the moduli of elasticity of the two steels are roughly equal. Thus it was necessary for the engineer to check deflections and hair cracking of the concrete.

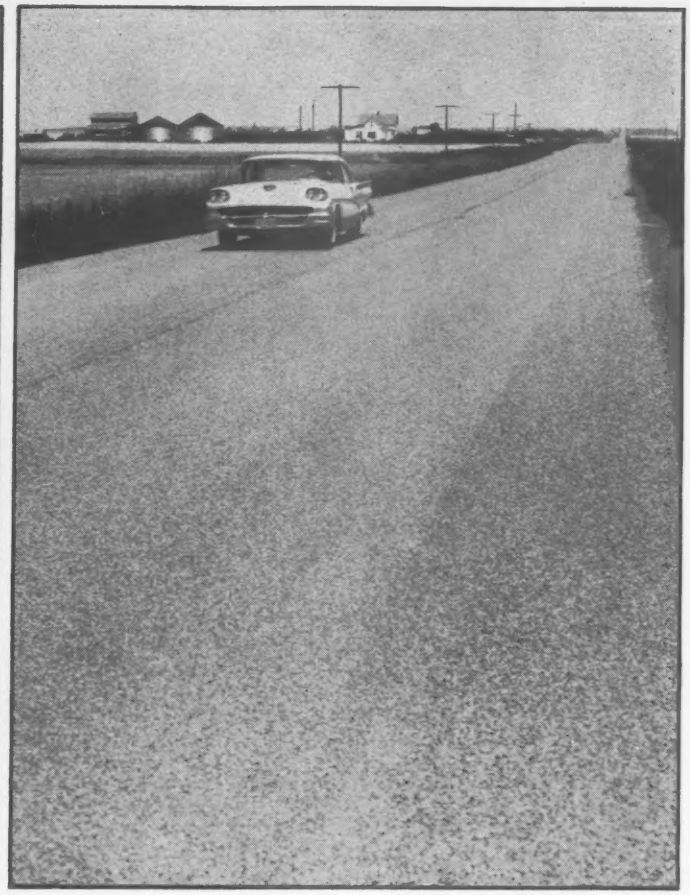
There are no expansions joints in the reinforced concrete framing. Continuous reinforced concrete slabs for the seat framing—some 700 ft in perimeter—were cast in 90-ft sections separated by 3-ft-wide shrinkage strips. Longitudinal reinforcement is spliced in the shrinkage strips to allow for contraction of concrete on both sides. Shrinkage strips were left unpoured for a two-month interval. During this period the concrete attained over 70% of its total shrinkage.

Gehron and Seltzer of New York City is the architect.

Scientific research
on soil-cement
pays off in Montana



Scientific research is aided by modern coring methods.



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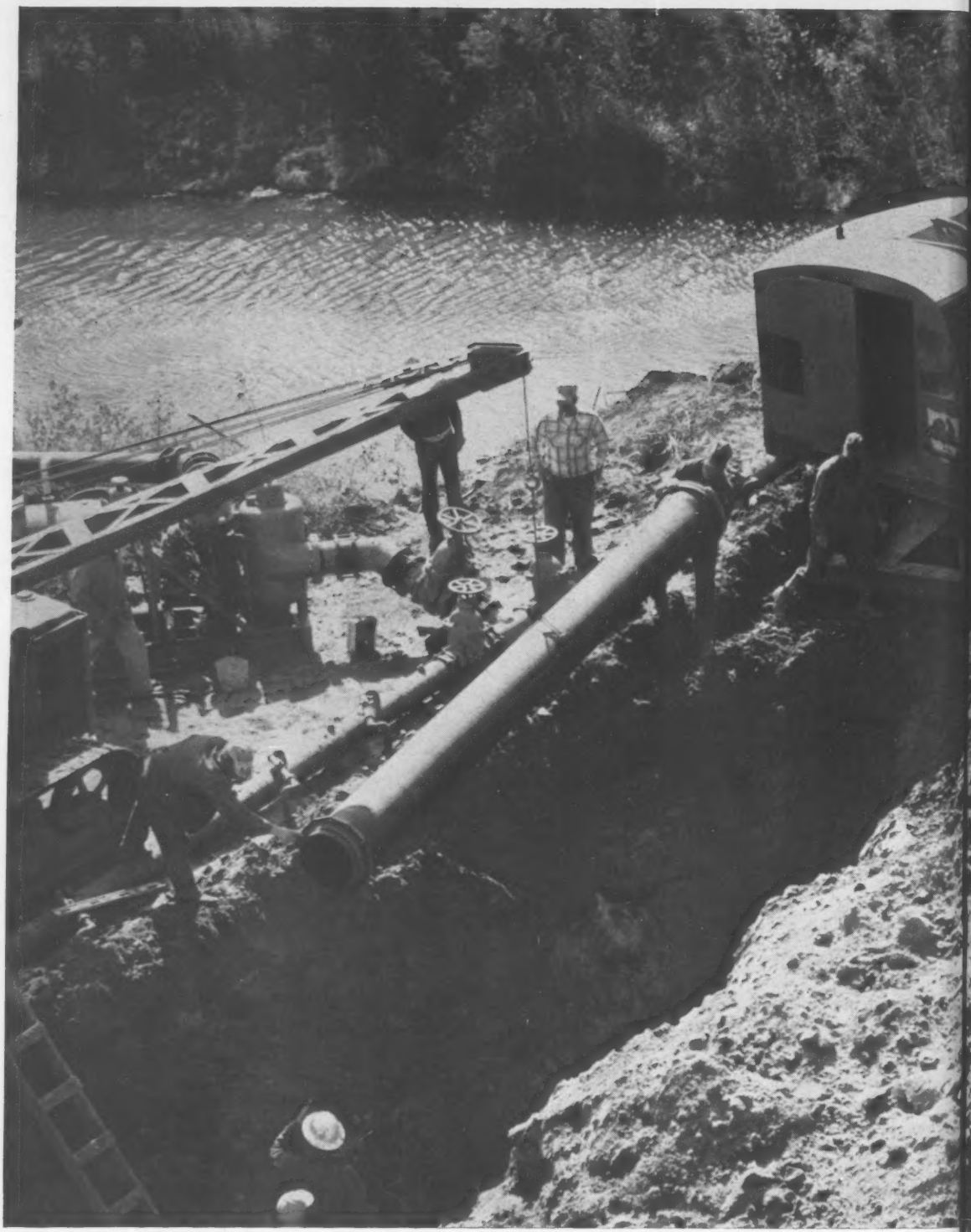

WILL PERFORM FOR A CENTURY WITH A RIVER ON ITS BACK

At left, you see a length of cast iron pipe being installed under the Floyd River in Iowa. This is part of a water feeder main which will reinforce the existing water supply system.

Despite the severe conditions of a river overhead, the inherent ruggedness of cast iron pipe promises at least a century of trouble-free performance, and rarely requires repairs or replacement.

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CAST IRON PIPE

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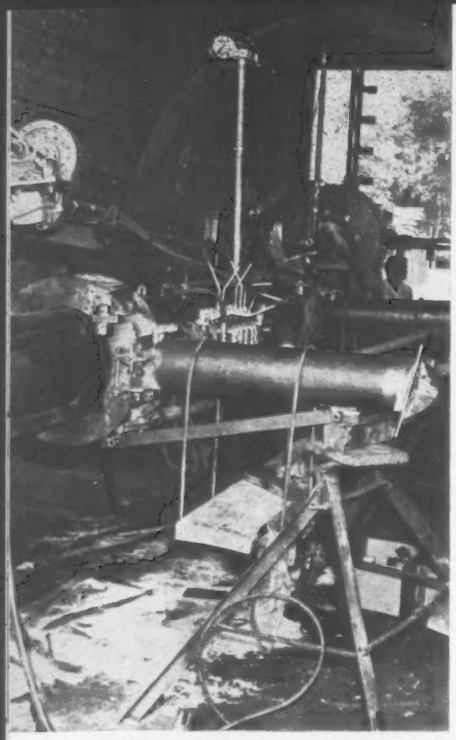
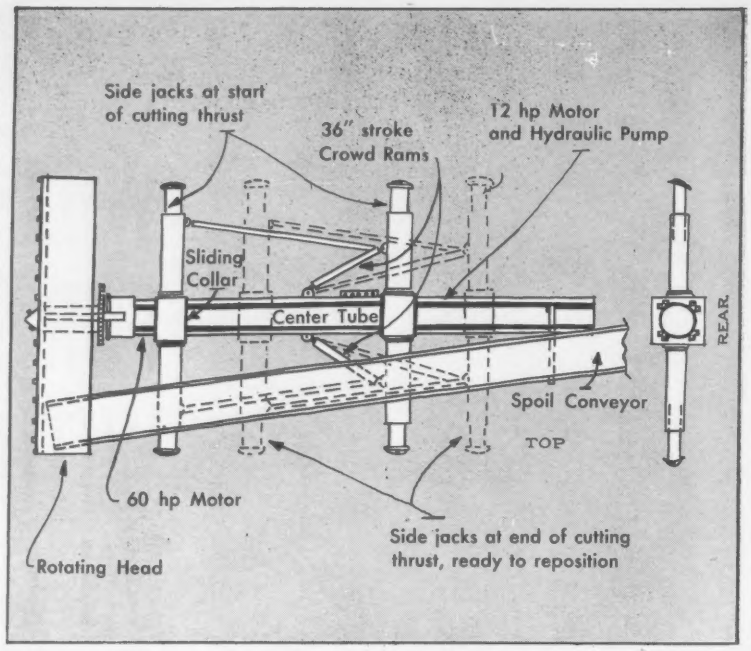


CONTROL PANEL is centrally located.



CROWD RAMS advance cutting wheel mounted on sliding tube.

Contractor Builds Low-Cost Tun

TEETH shave overlapping pattern.

A Chicago contractor built his own tunneling machine for boring an 11-ft sewer tunnel though dense gravelly clay. John Doherty Co. had the rig made in his own shops specifically for the job. It weighs only 2,500 lb and can be removed from the tunnel or put back in service in two hours.

The $1.2-million contract calls for a 9,000-ft tunnel to serve as a main drain for the city's South Route Expressway. Finished inside dimensions of the semi-elliptical tunnel vary. There are four sizes ranging from 8 ft 7 in. by 7 ft 9 in. down to 4 ft 6 in. by 4 ft.

When Doherty was awarded the contract he called in Loren Scott, an Indianapolis, tunnel engineer, to design a machine for the job. It was built in the contractor's shops at a total cost of $19,000, or about $2.10 per foot of tunnel.

The tunneler, dubbed the "Miner" mounts a drum-type cutting wheel. It literally shaves the material being mined off a vertical cutting face and onto a belt conveyor, which loads the muck cars.

The cutting wheel and gear box are mounted at the forward end of a center tube, which is a 16-in.-dia steel pipe 20 ft long with a ¼-in. wall. The machine is powered by a 300-v, 200-cycle electric generator, mounted above ground.

A 60-hp electric motor drives the cutting wheel, while a 12-hp electric motor operates the hydraulic system. Both motors and the hydraulic pump are mounted inside the center tube.

The center tube is held in place by two sliding collars. Each collar has a pair of 4-in. bore, 12-in. stroke opposing hydraulic rams that expand to brace against the lagging of the tunnel wall.

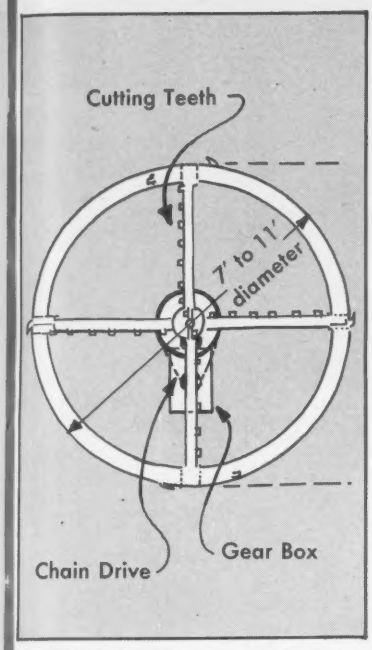
These jacks control horizontal alignment as well as hold the tube in operating position.

Two hydraulic rams attached to both the center tube and the sliding collars force the cutting wheel and center tube ahead when the side jacks are expanded and the machine is working.

Working in reverse these jacks pull the sliding collars and retracted side jacks ahead to a new position each time the heading is advanced 3 ft. The cutting wheel is stopped while the side-ram assembly is retracted for advancing the heading since at this time the cutting wheel and two 12-in. stroke jacks are all that support the machine.

These two double-acting jacks, one at each end of the center-tube assembly, are used for vertical alignment and support when repositioning but are retracted during actual operation.

The large cutting wheel is made of ⅞-in. sheet steel 24 in. wide. Four spokes, at 90 deg to each other, mount



CUTTING WHEEL has toothed spokes.

ost Tunneler

five or six teeth each, set to cut in overlapping patterns.

The machine is adaptable for any size cutting wheel from 7 ft to 11 ft in diameter. It measures 25 ft from cutting wheel to rear end of center tube. The 40-ft-long belt conveyor projects 15.5 ft past the end of the tube to facilitate loading muck cars two at a time.

With good ground conditions, the machine digs and loads 1 cu yd of dirt or clay per minute. Working three shifts a day under the close supervision of superintendent John Rusnak, the "Miner" averaged 60 ft of 11-ft-dia tunnel each 24 hr. The tunnel is being driven 50 ft below grade. Numerous wet spots slowed progress. The maximum footage for one 24-hr period has been 120 ft of 11-ft-dia tunnel.

The finished tunnel is semi-elliptical in design, so some hand mining is carried on directly behind the machine. This changes the circular cross section to the required "horseshoe" design. Wood lagging and steel ribs are placed directly back of the cutting wheel to support the excavation until a reinforced concrete liner is poured.

Excavation of the first work shaft was started July 7 of last year, and mining of the tunnel got under way Aug. 3. About 1,900 ft of the two smaller tunnels remain to be lined with concrete.

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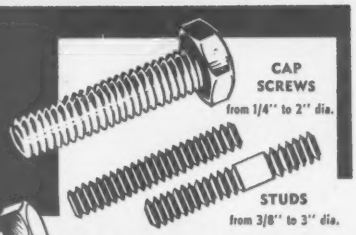

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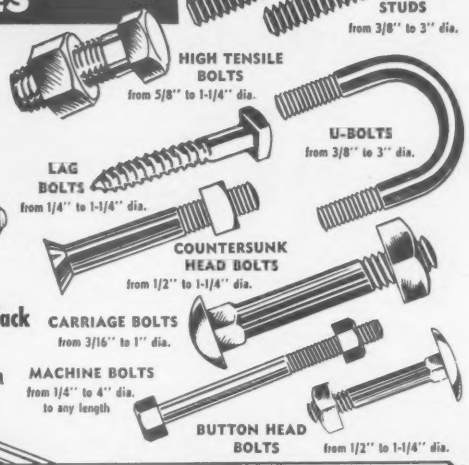

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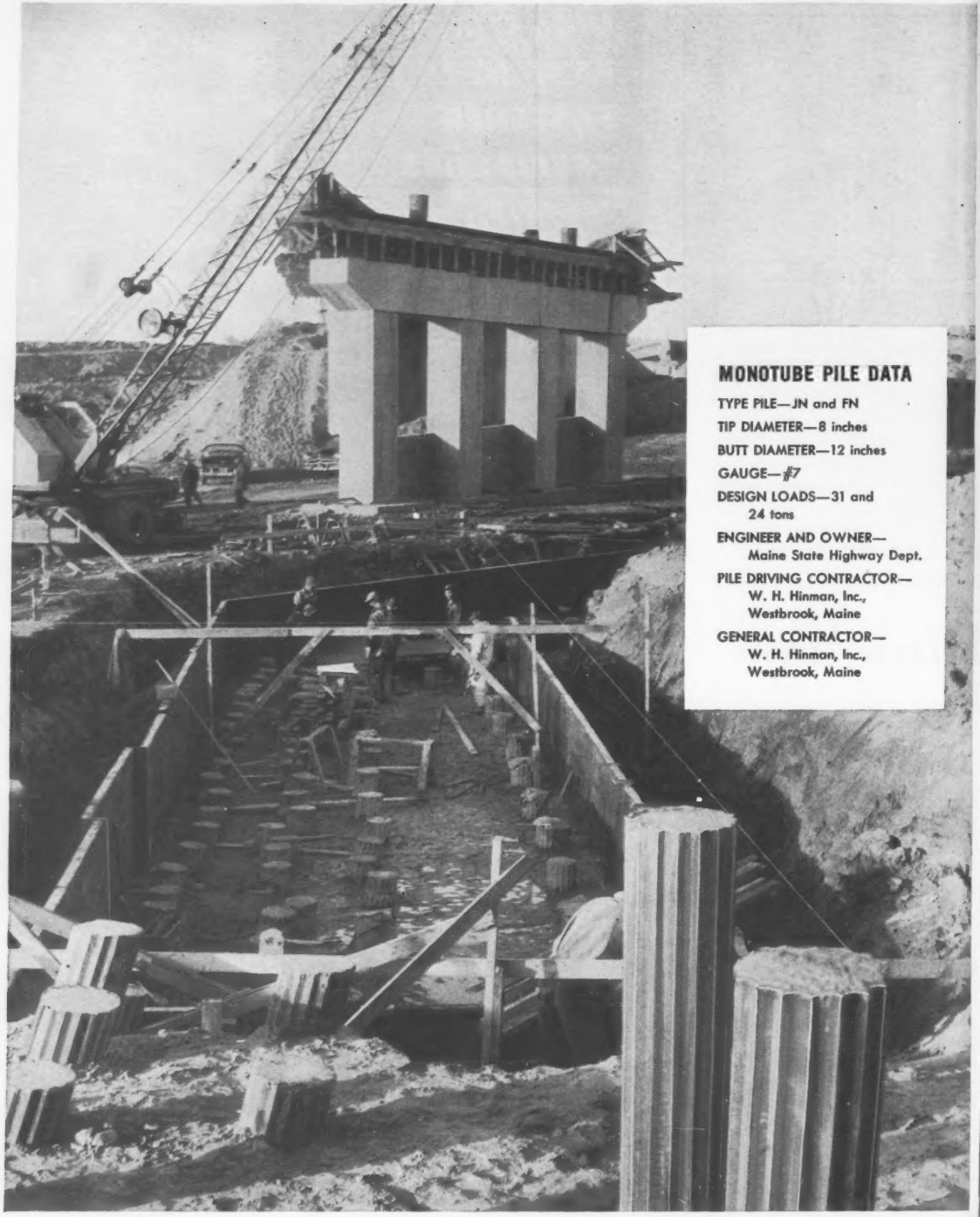

MONOTUBE PILE DATA

TYPE PILE—JN and FN

TIP DIAMETER—8 inches

BUTT DIAMETER—12 inches

GAUGE—#7

DESIGN LOADS—31 and 24 tons

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Maine State Highway Dept.

PILE DRIVING CONTRACTOR—
W. H. Hinman, Inc.,
Westbrook, Maine

GENERAL CONTRACTOR—
W. H. Hinman, Inc.,
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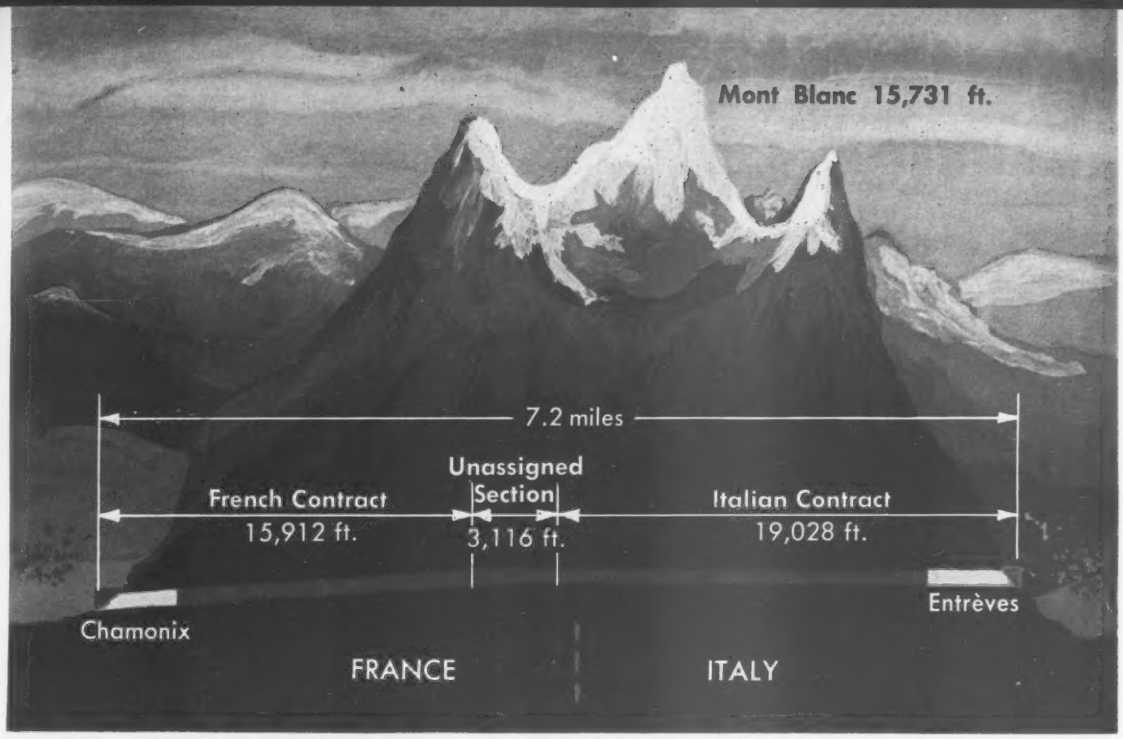


Tunnelers under Mont Blanc are making good progress so far, although . . .

Obstacles Slow Big Tunnel Job

Loose rock and underground streams have taken a decisive hand in what some tunnelers expected to be a seven mile long contest between the so-called "American" and "Swedish" drilling methods. Consequently, there can be no fair comparison, as yet, of the progress at opposite ends of the tunnel being cut through Mont Blanc between Italy and France.

French drillers, working from Chamonix, have used American methods and equipment to push 3,100 ft into the mountain since September.

Italians, working from Entreves since January, 1959, have used Swedish methods and equipment to reach the 4,300 ft mark.

In the "Swedish" method, a light (112-lb), semi-automatic jack-leg drill is physically held, directed, moved and controlled by an operator.

In the American method, a heavy (3,146-lb) fully automatic drilling assembly is hydraulically positioned and is operated by push-button controls.

Neither the French nor Italian drilling team has had a monopoly on difficulties, but the difficulties have not been the same.

The French team worked from early May until late August preparing for full-scale drilling. (The entrance section at Chamonix is on a 656-ft-radius curve and it was necessary to run a 13x16-ft sighting gallery into the rock for about 575 ft, to meet the straight run of the tunnel.) Progress was slow for the first 3½ months after the main tunnel work was started, averaging about 300 ft per month.

Soft and discontinuous rock proved troublesome during the first 690 ft of drilling; the Frenchmen had to erect 160 tons of metal shoring. Conditions improved beyond the 700 ft mark, and between December 15, 1959, and January 15, 1960, the cut moved forward some 490 ft despite a 2½ week strike.

From January 15 until February 20, the face was moved forward only an additional 610 ft. largely because of difficulty with the electric shovels that handle the muck. With clear going, the contractor hopes to proceed from here on at the rate of 13 ft per eight-hour shift.

On the other side of the mountain, the Italians have been working in decayed calcareous or clay schist, ribboned with quartzite. For the first 885 ft the miners moved forward at about 32 ft per day without much difficulty. Then the rock became brittle and it was impossible to keep the drill holes clean. Clearing small rock particles from the partially plugged holes lengthened each drill-shoot-muck cycle by 1½ hours.

The real trouble began at 1,213 ft. The Italians hit an underground stream that spilled water into the bore at the rate of 4,000 gpm. It took a month to stem the flow and get back to the drilling operations.

At 1,640 ft a rock fall virtually demolished the jumbo. The nature of the rock from this point on was so bad that the engineers decided to drive a pilot drift on ahead.

Behind the pilot drift, the tunneling proceeded on the top half of the bore only, to a point 4,278 ft from the portal. Excavation of the lower half of the bore was then begun and is currently proceeding at the rate of 50 ft per day. Within the next few weeks the contractor hopes to be working again on a full face.

When completed in late 1961, the Mont Blanc Tunnel will be the longest vehicular bore in the world. It will provide the only all-year auto route through the Alps between France and Italy. Financing, estimated at $33 million, is coming principally from the French and Italian Governments, with a nominal contribution from the Swiss Government. The finished tunnel will be 7.2 miles long. It will have a 23-ft-wide roadway and a ceiling 14 ft 10 in. high.

The cut is in the form of a rough horseshoe 31 ft 9 in. high, 32 ft wide at the widest point.

The tremendous bulk and height of the Mont Blanc mass (El. 15,771 ft) makes it impractical to work the tunnel from vertical shafts or adits. It is being worked only from the two portals. The

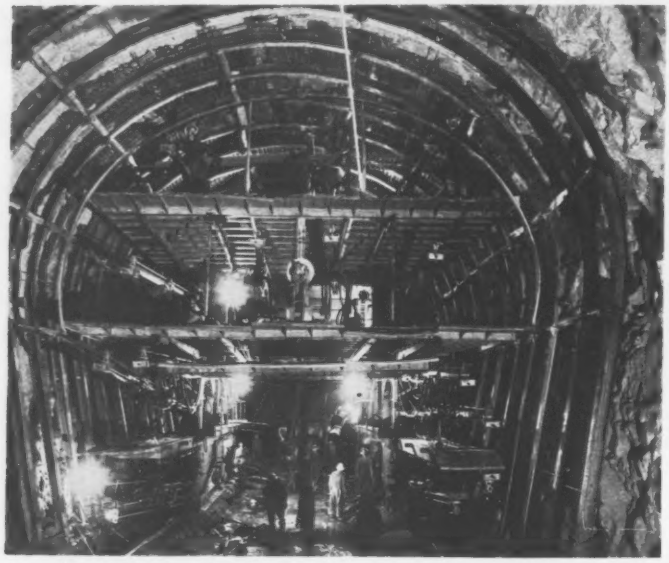
work from the French side is being done by the Societe d' Enterprises Travaus Publics Andre Borie, a combine of five Parisian contractors sponsored by the Borie organization.

For its drilling operations the French organization is using Ingersoll-Rand equipment. A three deck gantry jumbo mounts six tiers of Ingersoll-Rand DC 35 WD drills and a centrally located I-R DHD-400 Downhole Drill with an 8-in.-bit. The top deck of the jumbo carries three drills—one at either side and one in the middle—all on the same plane.

The middle deck carries four DC 35 WD drills, which are mounted on the same plane, two on either side of the burn hole drill.

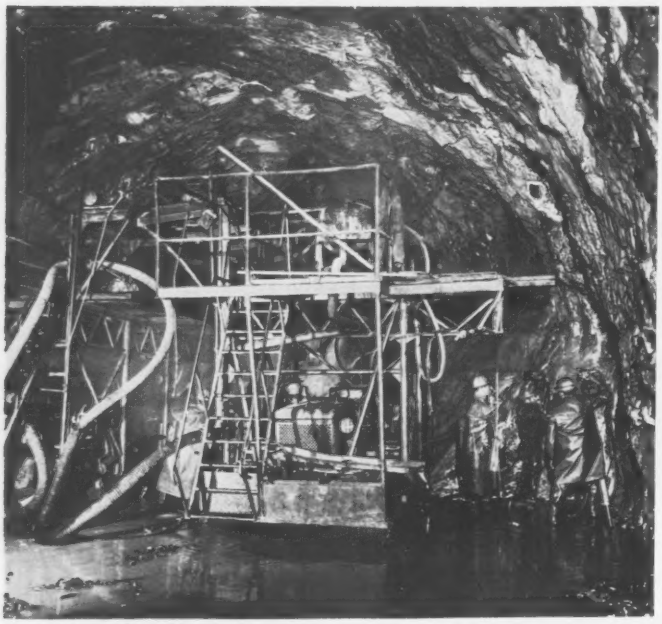
On the bottom deck and the floor working level below, the drill arrangement is different. Each of these levels carries four drills, but the drills are mounted in pairs, one above the other at each side of the jumbo.

The purpose of this drill arrangement is to permit mucking equipment to come under the jumbo to work the face. To accomplish this, the central section of the first floor of the jumbo



In the French bore . . .

. . . A three-deck, self-propelled jumbo mounts . . . 16 automatic drills (arrow) and . . .



In the Italian bore . . .

. . . Light platforms are used for a half-face cut by . . . Miners with light air-leg drills.

is raided until it is directly beneath the middle work deck. During the drilling operation the deck is lowered to provide access to the side drills.

All drills are boom-mounted. Each of the booms is separately controlled by five double-acting hydraulic pistons.

The Jumbo itself is made of structural shapes and box sections, and is so big that it barely clears the tunnel roof and sides. It is self propelled and is mounted on three sets of flanged wheels that roll on track. The rear wheels are idlers; the two front sets are gear driven by electric motors.

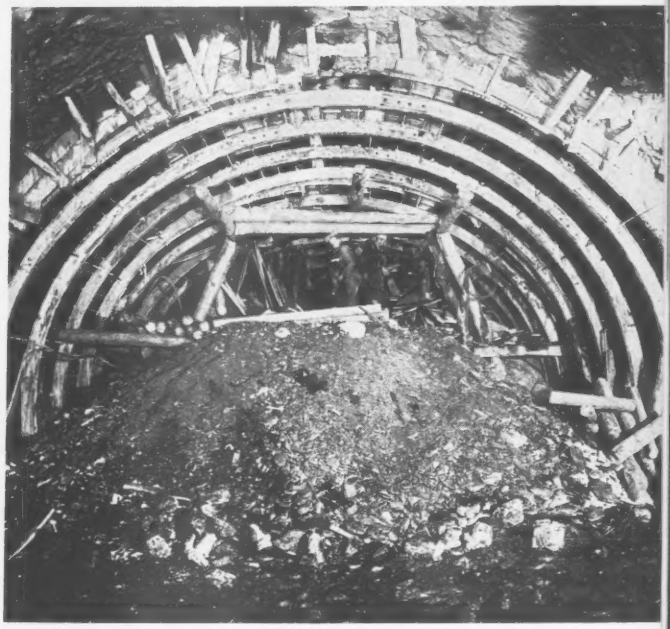
The French drilling pattern involves 121 holes of 1¾-in. diameter encircling the centrally located 8-in.-dia burn hole. All holes are drilled parallel with both the top and bottom and the sides of the tunnel. Shooting is done with French explosives containing 27, 34 or 83 percent nitroglycerine, and millsecond delay caps.

Initially the mucking was handled by two overshot tractors, excavators which loaded rubber-tired trucks but as the tunneling progressed, two sets of tracks were laid. Now, two belt loaders fill 10-cu-yd mine cars in a standard min-

Belt conveyors that load 10-cu-yd cars. But . . .

Loose, discontinuous rock is troublesome.

Diesel trucks hall the muck, but . . .



Rock falls bring danger and delay.

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Water pouring into the Italian bore at the rate of 4,000 gpm . . .

. . . makes a streambed of the tunnel's floor.

ing procedure using "cherry pickers" for car placement. An electric locomotive hauls the cars.

The Italians are using Atlas Copco drilling equipment. Originally, 14 to 20 "Tiger Drills" were worked on a full face from a wheel-mounted four-tiered jumbo. After the jumbo was ruined by falling rock, the contractor built a pair of lightweight, pipe frame platforms, which are just high enough for half face work. These platforms will be used until tunneling is resumed on the full tunnel section. This is expected to be in early May.

The mucking on the Italian side is being handled by overshot loaders, and articulated dumpers. The dumpers, which are pulled by 100-hp diesel tractors, have a capacity of 13 cu yd, and can make a U turn in the 25-ft tunnel base.

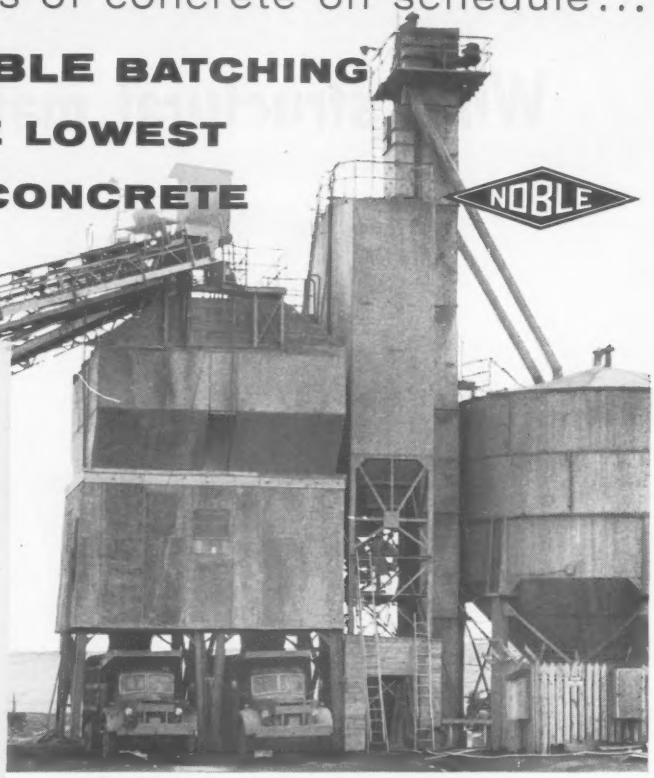
Between the 19,028-ft bore awarded to the Italian contractors and the 15,912-ft bore being handled by the French, there is a 3,116 ft stretch of tunnel not yet awarded to either. It will probably be turned over to the first firm that completes its present contract. Should the two teams reach this stretch at about the same time, they may be authorized to continue until the tube is holed through.

Regardless of the competitive features of the job there is no sacrifice of safety for speed. Andre Gervais, chief engineer for the French work summed up the situation this way: "Work is not being carried out with a starter pistol and a stop watch. What we have in mind is the safety of the men and the job to be done."

And so far, in spite of the dangerous conditions at both ends of the tunnel, there have been no fatalities and no serious injuries to workmen.

587,000 cubic yards of concrete on schedule...

DEPENDABLE NOBLE BATCHING PLANTS PRODUCE LOWEST COST-PER-YARD CONCRETE



Large construction jobs demanding an uninterrupted supply of concrete require the extreme dependability and high output of NOBLE batching plants. Typically, on George M. Brewster & Son, Inc., construction of jet airstrips at Griffiss Air Force Base, Rome, New York, twin NOBLE 3B plants batched 419,000 cubic yards at the rate of up to 5,000 yards per day for 2 years without a single shutdown and kept up to 5 dual drum pavers in constant operation. The ease and speed of transport, erection and disassembly of NOBLE 3B and NOBLE-MOBILE Central-Mix plants multiplied the savings for the Brewster company on its widespread operations.

The twin NOBLE 3B plants (above) at Griffiss Air Force Base discharge a total of six 1.37 cubic yard dry batches every 1 minute and 18 seconds. Each plant has 3 batchers only, 1 for cement and 2 for aggregates, which accurately weigh materials simultaneously for a **single** batch. Two trucks are loaded simultaneously. Installation has two overhead batching silos for 1200 cubic feet of cement, ground storage silo for additional 4600 barrels of cement, 300 tons of overhead sand and aggregate storage.

NOBLE-MOBILE Central-Mix concrete plants produce 52,000 cubic yards for building construction at Griffiss Air Force Base; 36,000 cubic yards for highway paving at Spring Valley, New Jersey; 80,000 cubic yards for approaches to George Washington Bridge, New York, now being double-decked. Output is up to 125 cubic yards per hour. Bin stores 100 tons of aggregates in 3 compartments, 275 barrels of cement in separate compartment. Low profile reduces conveyor height to top of aggregate bin. 5 cubic yard dry batch holding hopper at end of batch transfer conveyor charges tilting mixer. Adaptable for dry batch production. Complete with wiring, air compressor and automatic controls, compact NOBLE-MOBILE is transported at minimum cost from job to job.

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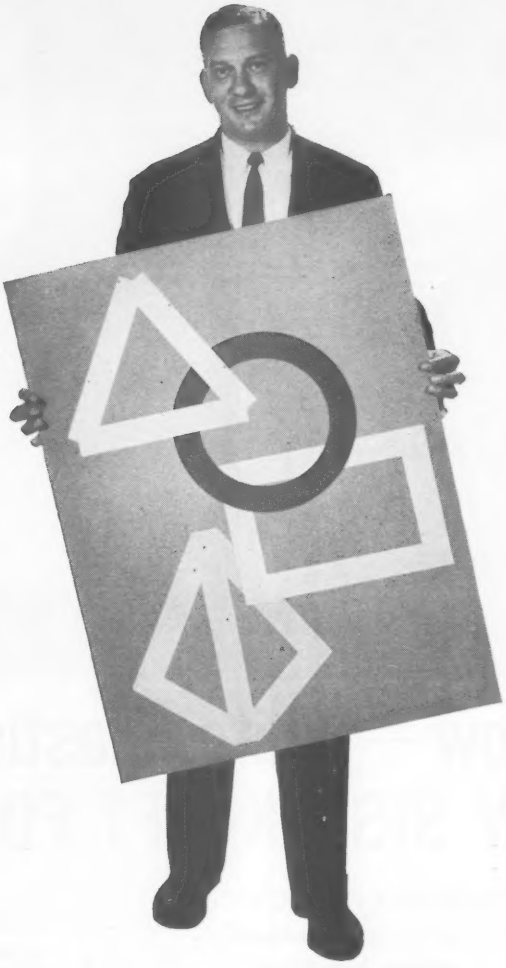

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almost any architectural form?

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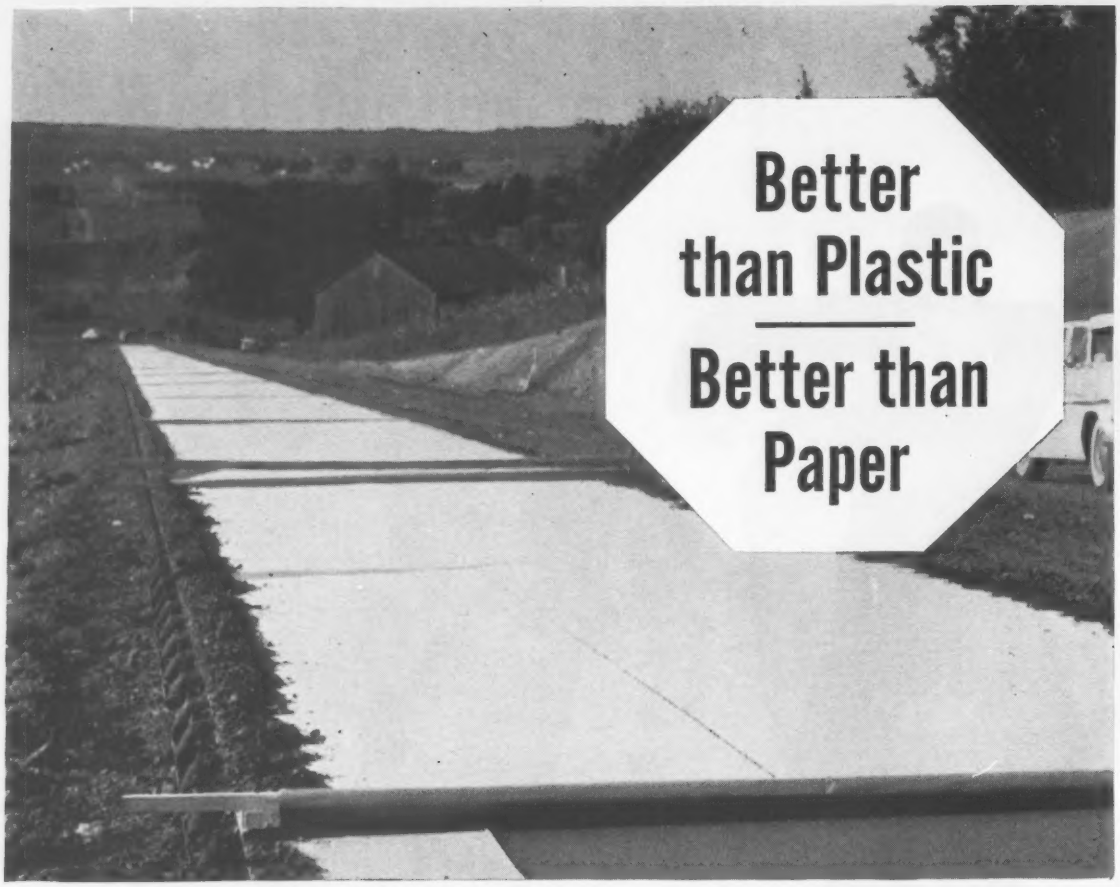

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NEW: The Sisalkraft Joint Former offers a new low cost way of forming contraction joints with removable plastic strips. Write for bulletin to American Sisalkraft Corporation, Attleboro, Massachusetts.

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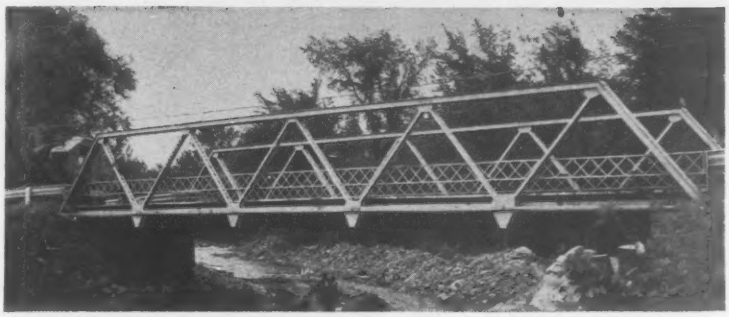
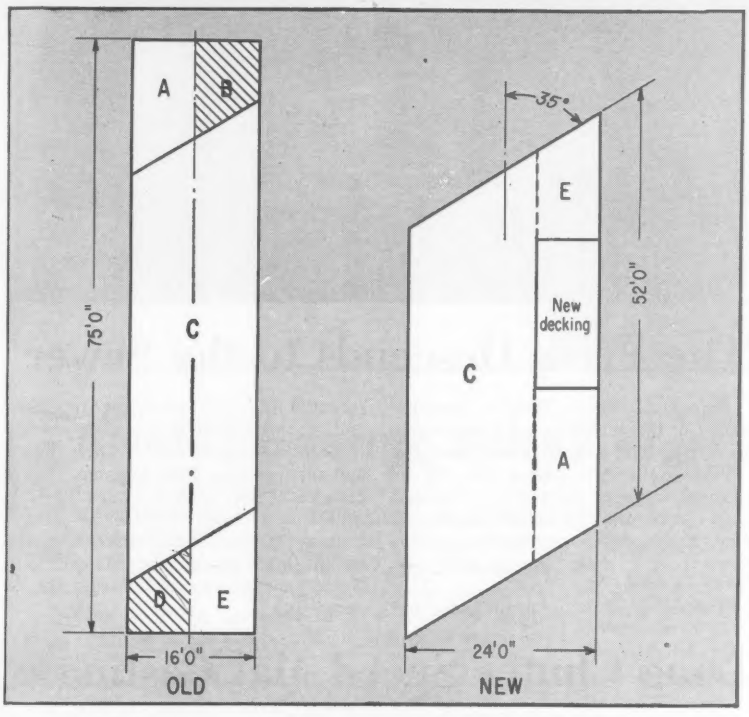


Steel From Old Structure . . .



. . . Becomes Part of New Deck

The Department of Highways of Franklin County, N. Y. has made economical use of old steel bridge decking.

The old truss bridge was constructed more than 60 years ago at the foot of steep grades, with resultant poor visibility and danger to traffic. In 1948, the county replaced wood planking with 16-ft-wide Irving steel decking.

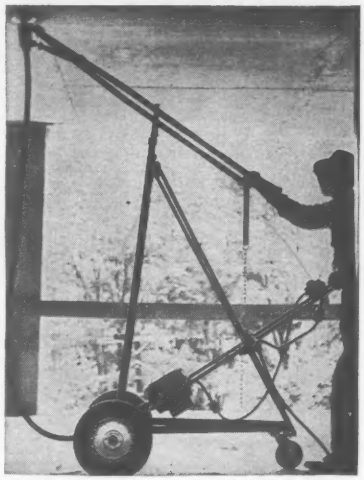
In 1959, engineers redesigned the structure as a skewed steel I-beam span with 24-ft roadway and reduced its length from 75 to 52 ft.

After careful study, workmen cut the existing decking into five pieces on lines established by templates. The pieces were then dragged off the old bridge and stored on the site. Workmen removed the old trusses and built new abutments.

Workmen placed steel I-beams for the new span at an elevation designed to raise the final grade 4 ft above the previous position. Seven-inch sills for the steel deck were welded to the main beams at 20.5-in. spacing, c-c. Three sections of the salvaged steel deck were dragged into position and welded to the sills.

Only 178 sq ft of new bridge decking was required to complete the deck for the new structure.

HOW TO GRIND CONCRETE CEILINGS



More and more building specifications require finely finished concrete ceilings. Because of this new requirement, Stow Manufacturing Company has developed the Stow CG Ceiling Grinder—a special machine designed to grind off form marks and fins, cut off nails and smooth the entire surface.

With this machine, one man can average 4,000 square feet per day. Simple to operate, it pushes along like a baby carriage.

All models have a 1 HP totally enclosed motor operating at 3450 RPM. The disc is a 9" Bayflex of cotton fibrous material with a silicon carbide abrasive bonded with resin.

Two models are available:

CG 10—for ceilings 8 to 10 ft. high
CG 18—for ceilings 10 to 18 ft. high

Also Available With Gas Engine

Stow Manufacturing Company also makes a complete line of portable electric flexible shaft grinders for both wet rubbing and dry grinding walls. For more information on the Stow CG Ceiling Grinder and a copy of Stow's Grinding Concrete pamphlet, which gives the proper speeds for both wet rubbing and dry grinding, contact your Stow distributor or send in the coupon below. Stow also makes a complete line of concrete vibrators, rotary trowels and screeds.

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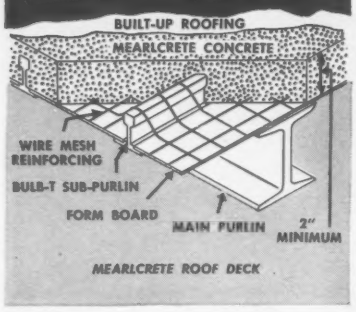

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Competitive with all other systems!

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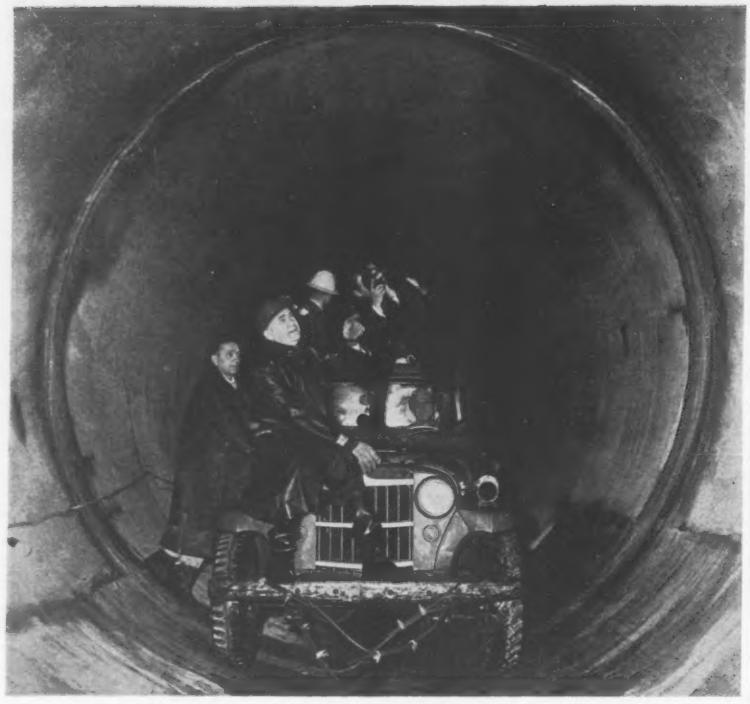


The Press Descends to the Sewer

Samuel S. Baxter, Water Commissioner of Philadelphia, is a firm believer in letting the public know about the public works it is paying for. He is also an engineer (currently a national director of the American Society of Civil Engineers) so he wants to see for himself how sewer construction jobs are progressing.

Putting these two objectives together recently, he invited newspaper reporters and photographers to go along on an inspection of a new sewer. Their stories and pictures gave Philadelphians a better idea of why such a sewer cost $1.3 million.

In the picture above Sam Baxter sits on the front of the jeep, pointing out the sewer's virtues and its defects, if any.

Long Chutes Speed Mat Casting

A system of special chutes aided concreting of four foundation mats for the Taft Houses apartment buildings in Manhattan. Casting each 1,600-cu-yd mat—roughly 50 x 200 ft in plan and 4 ft thick—required only seven to nine hours.

Carpenters built twelve 40-ft-long chutes with 2 x 12 sides and 2 x 4 cleats to brace 18-in.-wide plywood bottoms. They supported double plank walks for each chute on 3 x 4 ledgers hung from the sides with bridle irons.

The chutes were mounted on timber horses at the chute's low end and its midspan point. The horses rest on the top reinforcing mat. Extra steel high chairs were placed in these areas to prevent any sagging from taking place in the top steel.

Six chutes, spaced about 8 ft apart along the mat's length, conveyed concrete from each side of the excavation. Twelve-inch pour pockets were cut at 6-ft intervals along the chutes' length. Workmen opened them during concreting, proceeding from the low end to the high end.

This helped place concrete close to its final position in the mat. Limiting lateral flow of the concrete reduced the danger of segregation.

After each section had been completed, a crane hooked onto three cables that were attached to the chute and swung them to a new position farther down the line.

Benjamin Miller, general manager of the Concrete Division of HRH, devised the system.

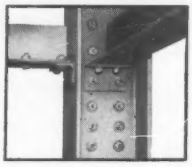
What's the best way to connect this joint?

Rivets? Bearing Bolts? High Strength Bolts?

If you use rivets, you need a skilled crew of 4 men, have to pull the iron together with fitting up bolts, get unpredictable clamping force from the cooled rivets with no assurance that each has completely filled the hole. Strength of joint would be shear strength of the rivets, and net section of the steel.

If you use bearing bolts, you can do the job faster with a two man crew, and get known clamping force from torquing the nuts. But hole size and alignment become critical, with reaming required. Grip length is also critical, making these bolts less versatile. For the longer bolts, assembly costs go up because of increased driving effort. And fitting up bolts must still be installed—and removed.

If you use high strength bolts, you're using the finest fastening method yet developed for structural steel. With minimum training, two-man crews do expert work. Results are *uniform*. Fitting up bolts become final bolts. Clamping force is so high, friction locks members in place; hole size is no longer critical, simplifying and speeding erection.



Definitely, you get the best joint with high strength bolts . . . and the best of such bolts when they carry the RB&W marking. Their quality is certified by size and by lot. Both bolts and nuts are tested for conformance to ASTM A325.

For details, contact Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

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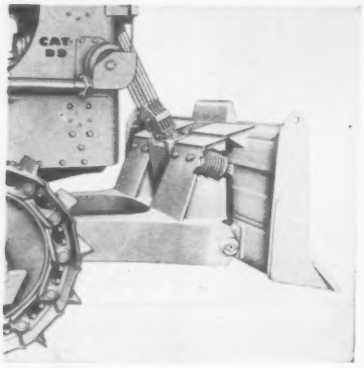
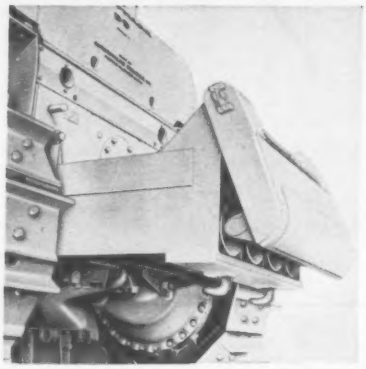
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco.

LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION

FOR TANDEM PUSHING C-frame fits on rear of tractor.



RUBBER SPRINGS cushion dozer.



CUSHION BLOCK absorbs impact.

Three Aids to Faster Pushloading

The inside mounted No. 9C Cushion-Dozer and the case-mounted Cushion Push Block permit approach and contact of push tractors at relative speeds up to three mph.

A third tool, the rear-mounted tandem pusher C-frame, is designed for use on tractors equipped with standard bulldozer blades.

Both the No. 9C Cushion-Dozer and the Cushion Push Block are designed and constructed to absorb the shock of push-tractor contact with scrapers at these higher-than-normal speeds. The No. 9C is available for the D9E Tractor only, and the Cushion Push Block can be mounted on either the D9E or D9D Tractors. Tandem pusher C-frames are available for both the D8H and the D9E Tractors.

(For more about pushloading see the feature article on p. 30 of this issue.)

Of tractor width (10 ft 11 in.) the specially reinforced No. 9C bulldozer blade can also be used for many dozing applications, according to the manufacturer. It is now available with either front or rear mounted cable control units.

Cushioning of the No. 9C Cushion-Dozer is accomplished with four rubber springs, each made up of eight rubber discs. Springs are assembled with a preload of 1 in. (7,200 lb preload) and will compress 2¼ in. (93,000 lb plus) before bottoming. The dozer is mounted to heavy-duty push arms through a connecting box section of heavy steel plate. Push arms are in turn welded to a heavy-duty crankcase guard.

The case mounted Cushion Push Block is cushioned by four rubber springs, each with sixteen rubber discs, giving a total of 64 rubber discs. Springs are assembled with a preload of 2 in. (8,000 lb preload) and will compress 6 in. (110,000 lb) before bottoming.

Trunnions of the rear-mounted tandem pusher C-frame bolt directly to the track roller frame behind the bulldozer trunnions. The assembly is supported at the rear by the tractor drawbar. Caterpillar Tractor Company, Peoria, Ill.

Belt-Drive Truck PTO Has Simplified Design

Trucks for ready-mix and dump applications being built by White Truck Division of White Motor Co. feature new flywheel power-takeoffs, both belt and gear driven.

The belt-drive flywheel PTO for all types of drive applications is said to feature simplified design, with belt drive from a cog pulley on the rear of the crankshaft ahead of the flywheel to another cog pulley in the flywheel housing.

PTO hookup is from an outlet flange on a short shaft from the driven cog pulley. Drive ratio is 1:1.

A half-cab chassis has design features that are said to permit up to 8-yd mixer applications and up to 5,000 lb of additional payload. This unit, Model 6264, has lightweight aluminum half-cab alongside the engine, aluminum chassis cross members, set-back front axle for up to 18,000 lb capacity and up to 14:00 x 20 tires, and turning radius 3 to 5 ft shorter than conventional type trucks. The White Motor Co., 842 East 79th Street, Cleveland 1, Ohio.

Welding Unit Resurfaces Tracks, Rails and Edges

Heavy crawler tractor tracks, rails and edges can be resurfaced with only one set-up or mounting on a Twin Track-o-Matic Welding Unit.

A feature of the unit is a newly designed rotating work table. The table is 36 ft long and will hold an entire track rail assembly, with or without shoes, for any size and type of crawler tractor tracks.

The work table is mounted on two trunnions, and can be rotated 360 degrees by a heavy-duty self-lock gear reducer and handwheel. It can be locked at any position in the circle. This is said to permit accurate angle positioning to resurface the edges of track rails—two edges at a time with the "Twin" welding heads. Automatic Welding Co. Waukesha, Wis.

Rotary Compressor Mounts on Any Tractor

A 600-cfm rotary portable compressor unit mounts on the rear of a tractor and is driven through a rear power takeoff. It can be teamed with a rock drill mounted on the same tractor.

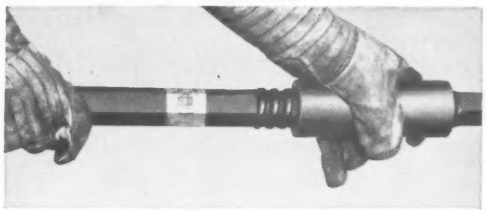
The RT-600 is built as a complete package ready to mount. Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pennsylvania.

Never before drill steel like this!

NEW GARDNER-DENVER *HI-LEED* STEEL

Drillers who have used this unique and revolutionary Gardner-Denver thread design are enthusiastic about its convenience and economy. Give it a try on your own rock drills—you'll soon see why. Call your Gardner-Denver drill steel specialist, or write for new bulletin on HI-LEED steel.

Only Gardner-Denver *HI-LEED* drill steel gives you all these field-proved advantages



ALWAYS UNCOUPLES BY HAND

New HI-LEED thread design makes wrenching unnecessary. Gardner-Denver engineers have incorporated field-proved reverse buttress design into an entirely new thread form that always uncouples by hand.

CUTS DRILLING TIME ON EVERY HOLE

HI-LEED steel saves time in adding rod . . . and ease of uncoupling, without use of wrenches, helps drill hole faster.

SENDS MORE IMPACT TO THE BIT

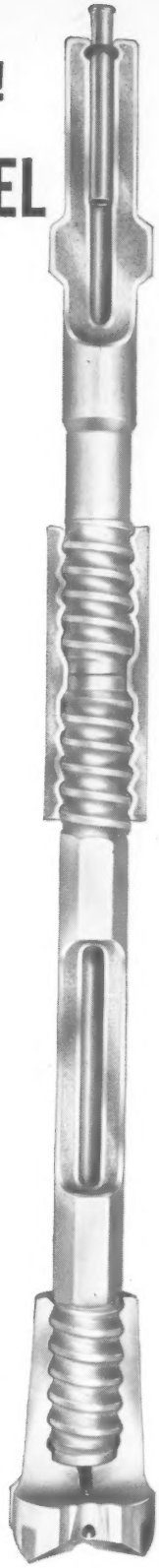
HI-LEED sectional steel transmits drill impact almost as well as a solid rod. That's because precision-milled threads on rod and coupling are in close contact over a large total area, thus holding rod ends firmly together.

DRILLS MORE FOOTAGE PER ROD

HI-LEED rods are designed to last longer than any other sectional steel, and the wide thread peak assures maximum wear. Carburizing and shot-peening give the steel a hard surface and tough inner core.

PREVENTS LOST HOLES

New HI-LEED design keeps mating parts snug—rods won't uncouple in the hole or while pulling out. Other thread forms may not hold a tight connection and many rod strings have been lost in the hole while pulling out with rotation on.



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Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Alcoa offers a dozen ways

Alcoa* Alumalure finish lets your plans for bright, modern beauty come to life—*without adding premium cost.* No limits to your imagination, either. Select from 12 hues including natural aluminum finish . . . for industrial building, school, shopping or recreation center, warehouse, or any other structure you're creating.

You'll get *all* the advantages of Alcoa Aluminum when you specify Alumalure finish. It's light in weight, strong, corrosion resistant. It comes in sheets as large as 48 in. wide, 30 ft long—handles easier, goes up faster, *needs no maintenance.* It's available in corrugated, V-beam, ribbed or flat sheet. And Alumalure—a tough, baked enamel finish on aluminum—already has passed the *15-year* mark in a rigorous test of durability.

Specify Alumalure finish by name . . . your assurance of the *finest* baked enamel finish, factory applied under rigid quality control. It's very easy to find out all about Alumalure finish. Your local Alcoa sales office has samples. Get color swatches and full technical data by writing: Aluminum Company of America, 821-D Alcoa Building, Pittsburgh 19, Pa.

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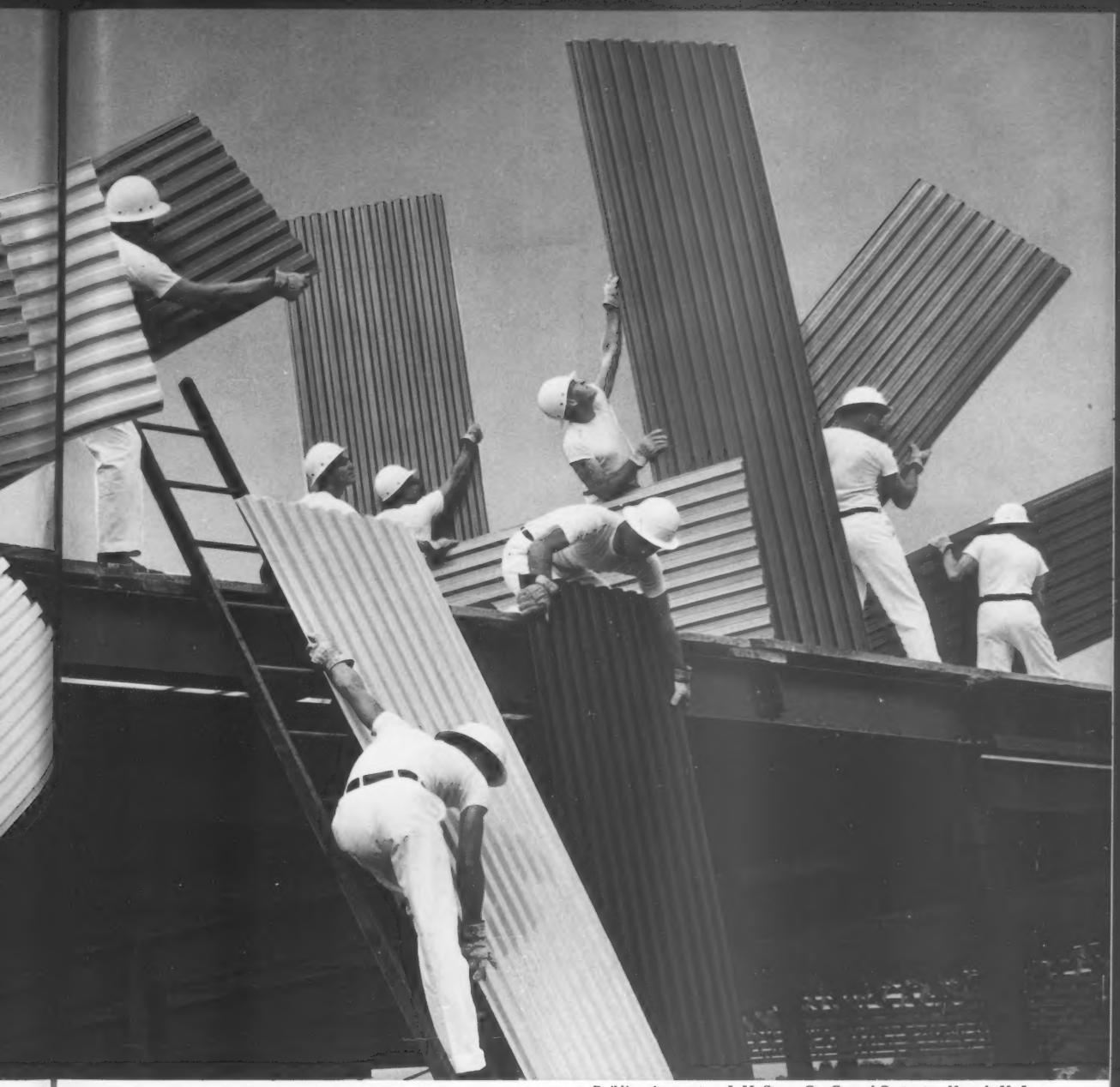
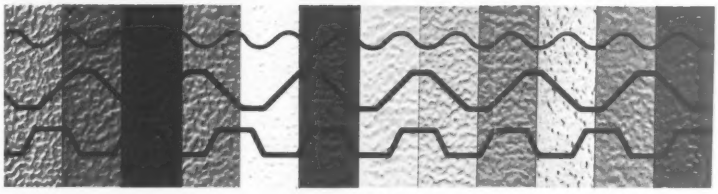


Building site, courtesy J. M. Straus Co., General Contractor, Newark, N. J.

to beautify within your budget!



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MADE BY ALCOA

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with Alcoa Alumalure finish

and natural finish aluminum sheet through these dependable jobbers:

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Chris Andersen Materials Corp.
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392 Second, W.
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946 Kane Street
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add lasting beauty to your buildings using Industrial Building Products with Alumalure finish made by

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

Men and Jobs

James F. Fairman Named To Receive NSPE Award

James F. Fairman, senior vice president of the Consolidated Edison Co., New York City, will receive the 1960 National Society of Professional Engineers Award. The award, which is given for outstanding service to the engineering profession, will be made at the Society's annual meeting in Boston this June.

Mr. Fairman worked his way up the Con Ed ladder, starting as assistant outside plant engineer for the Brooklyn Edison Co. in 1925. From 1951 to 1952 he was on leave for government service as deputy administrator and administrator of the Defense Electric Power Administration.

Mr. Fairman has been chairman of the Edison Electric Institute's Technical Appraisal Task Force on Nuclear Power and has also been chairman of the National Association of Manufacturers' Committee on Nuclear Energy.

The Society's award was first established in 1949. Other recipients were Herbert Hoover, 1949; David B. Steinman, 1952; Charles F. Kettering 1953; Harry A. Winne, 1954; A. A. Potter, 1955; Donald A. Quarles, 1956; Granville M. Read, 1957; Nathan W. Dougherty, 1958; and William F. Ryan, 1959.

Associations

George Anderson has been elected president of the Wyoming section of the American Society of Civil Engineers. Mr. Anderson is district engineer for the Wyoming state highway department.

Harold L. Worthington, past president of the Seattle chapter, is the new president of the Structural Engineers Association of Washington.

miller

FIVE IN ONE

FIREBALL

Other Miller welders in this series include:

DA-300-L BIG RIG
Four-in-One:
AC arc welder; DC arc welder; 10 KW AC power plant; 1 KW DC while welding

D-250-L ROUSTABOUT
Three-in-One:
DC arc welder; 10 KW AC power plant; 1 KW DC while welding

D-250-W ROUGHNECK
Two-in-One:
DC arc welder; 1 KW DC while welding

Here's what makes this Miller model the "Five-in-One":
1. AC welder for metallic arc welding
2. DC welder for metallic arc welding
3. AC or DC welder for TIG welding
4. A 10 KW, 115/230v single phase 60 cycle power plant
5. 1 KW of DC while welding

The DAH-350-L Fireball, driven by Hercules 32 hp engine, is another Miller FIRST, offers both a-c and d-c for metallic arc or TIG welding with three separate a-c and d-c amperage ranges for each.

There's continuous high frequency for a-c TIG welding with choice of "start only" or constant high frequency for d-c TIG work.

Standard equipment includes built-in high frequency stabilizer, polarity switch, power supply for water coolant system, and automatic inert gas control panel with solenoid valve and post flow timer. Trailers are available for welder only or for welder with coolant system and gas cylinders.

SPECIFICATIONS

	Metallic Arc	Tungsten Arc
WELDING RANGE	35-100 Amps AC	35- 75 Amps AC
	65-160 Amps AC	65-160 Amps AC
	110-400 Amps AC	150-375 Amps AC
	35- 80 Amps DC	35-100 Amps DC
	75-175 Amps DC	85-225 Amps DC
	125-350 Amps DC	170-375 Amps DC
RATED OUTPUT	250 Amps Tungsten Arc, 100% Duty Cycle DC	
	300 Amps Tungsten Arc, 100% Duty Cycle AC	
CURRENT ADJUSTMENT STEPS	Infinite	
MAXIMUM O.C.V.	72 Volts DC	
	80 Volts AC	
1 KW DC AUXILIARY POWER	115 Volts	
AC GENERATOR OUTPUT	10 KW	
OUTPUT VOLTAGE	115/230 Volt, 1 Phase, 60 Cycle	

Complete specifications on these welders will be sent promptly upon request.

miller ELECTRIC MANUFACTURING COMPANY, INC., APPLETON, WISCONSIN
EXPORT OFFICE: 250 West 57th St., New York 19, N.Y. • Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

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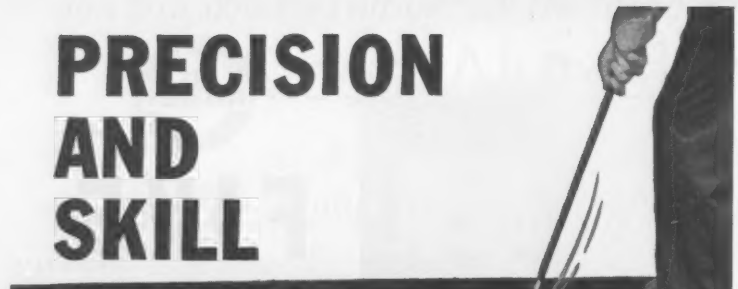

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Making a top-quality grating requires as much precision and skill as playing an expert game of golf. The manufacture of grating demands a history of experience, precise engineering, and careful workmanship.

The champion in grating is always IRVICO. Why? Because IRVICO has developed a skill based on more than half a century of experience and know-how in solving tough problems of grating engineering. As a result, IRVICO grating products are known for giving superior performance under the most trying conditions.

When you want a grating that is engineered with the rigorous discipline of a consistent winner, specify IRVICO... you'll be sure to stay "out of the rough."

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ORIGINATORS OF THE GRATING INDUSTRY
EST. 1902

Offices and Plants at: 5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 20, CALIFORNIA

Obituaries

Charles T. Leeds, 82, senior partner, Leeds, Hill and Jewett, consulting engineers, Los Angeles, and one of the nation's top authorities on river, harbor and flood control work. Mr. Leeds graduated from M.I.T. in 1899 and from the U. S. Military Academy, West Point, in 1903. Mr. Leeds formed his consulting firm in 1912 after ten years with the Corps of Engineers.

Robert E. Foley, 66, President-Treasurer of Robert E. Foley Construction Corp. and Foley Electrical Corp. of Binghamton, N. Y. He had been a specialist in power line construction.

Albert Hager, 80, retired vice president of the Atlantic Gulf and Pacific Co., New York, N.Y. Mr. Hager was a leading exponent of development of the Port of New York area.

John G. W. Thomas, 57, past president of the Boston Society of Civil Engineers. He was projection engineer with Metcalf & Eddy in Boston and formerly was chief engineer of the Locks and Canals Corp. in Lowell, Mass.

Robert Strandberg, 71, Boston consulting engineer and expert in hydroelectric power development. He worked on such projects as the Roanoke Rapids hydroelectric installation in North Carolina and the Waneta project at Trail, B. C.

George W. Walker, 71, president of George W. Walker & Sons, Buffalo, N. Y. He was a past president of the former Builders Exchange, the Construction Industry Employers Association and the New York State Association of Builders.

Earl A. Crump, 59, assistant chief engineer for location, right-of-way and design for the North Carolina Highway department. Mr. Crump was an organizer and twice president of the North Carolina State Highway Association.

John H. McClatchy. 85, pioneer builder, who in 50 years developed nearly $1 billion worth of real estate in suburban Philadelphia.

Leonard A. Bauer, 52, supervisor of Cincinnati's $254 million expressways program. He has held the position of expressways engineer since it was created in 1956.

George S. Grant, 70, Ontario road and railroad builder. He served as president of both the Ontario Road Builder's Association and the British Columbia Heavy Construction Association.

Twin Highway Tunnels, Colorado

Contractor must maintain heavy traffic through narrow canyon; has long supplies haul from railhead

Colorado's major east-west highway, US 6-40, Interstate 70, still has a bad two-lane, tight curve bottleneck halfway between the new 1958 four-lane bypass of Idaho Springs and the 1959 three-level interchange at the foot of Floyd Hill.

This is caused by a Rocky Mountain promontory that juts into Clear Creek Canyon too far and at too sharp an angle to carry a four-lane highway that meets Interstate curvature standards. Twin tunnels through this promontory, and other structures and road improvements to connect with earlier sections, will cost the State Highway Department $1,744,186.

The award to Colorado Constructors, Inc., Denver, is 15% under the engineers estimate, but it was less than 2% under the second low bid of Z. H. Lowdermilk, Inc., Englewood, Colo., bidding jointly with Gardner Construction Co.

Floyd Hill is five miles east of Idaho Springs and 30 miles west of Denver. During construction, traffic between Floyd Hill and Idaho Springs will be carried on a two-lane state highway (on the old narrow gauge railroad roadbed) and a narrow county road through the canyon.

Materials and supplies must be hauled from Denver, the nearest railhead.

The twin tunnels, 695 ft long, will be bored 27 ft apart. They will each be 32 ft wide and 26 ft high, and have a 3-ft walkway.

Other work includes grading and plant-mixed-asphalt surfacing on the 2.032 miles of highway under construction, and these seven structures:

Bridges over Clear Creek

Reinforced concrete and I-beam structures:
2-217 ft long
2-203 ft long
Concrete slab and I-beam ramp bridge, 157 ft long

Twin concrete slab and girder bridges, 94 ft long, across a service road

Class A concrete must contain a minimum of six sacks of cement per cu yd.

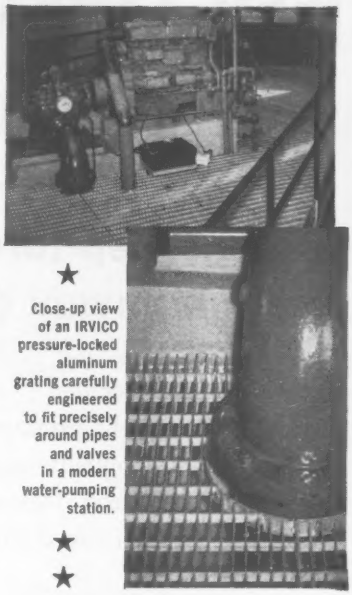
Minimum wages include: carpenters, $3.00; crane, dragline, power shovel and boom-type tractor operators, $3.15; common laborers, $2.25; tunnel workers—grouting and mucking machine operators, $3.15; mechanics and welders, $3.00; brakemen and helpers, $2.40.

1C Colorado Constructors, Inc., Denver	$1,744,186
2 Z. H. Lowdermilk, Inc., Gardner Constr. Co., Englewood, Colo	1,774,536
7 C. L. Hubner Co., Denver	2,068,365
EE Colorado State Highway Department, Denver	2,058,117

Bids: 2-25-60 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub entire proj	ls	job	$45,000	$90,500
Structures, remove 10	ls	job	750.00	1,500
Culverts, plug	ea	2	35.00	20.00
Headwall, remove	ea	1	250.00	150.00
Guard posts, reset	ea	12	2.50	7.00
Fence, remove	lf	1,400	0.04	0.10
Guard fence, remove	lf	1,505	0.35	0.50
Excavation, tunn enlarg	cy	400	25.00	10.00
unclassified	cy	361,000	0.90	0.79
tunnel	cy	33,600	10.00	9.50
unclassified ditch	cy	1,000	1.50	1.00
Stripping	cy	1,000	0.20	0.15
Exc, struct, uncl misc	cy	3,280	4.00	4.50
bridge	cy	1,759	13.00	9.00
Struct backfill, cl 1	cy	1,900	3.00	2.00
Compaction, mod	cy	434,000	0.04	0.03
Wetting	Mgal	4,720	0.50	0.50
Overhaul, sta yd	sta yd	1,580,000	0.01	0.01
yard mile	yd mi	37,200	0.15	0.10
ton mile	ton mi	52,600	0.15	0.15
Subbase, cl 1	t	25,800	0.90	0.75
Gravel surf course	t	20,200	1.25	0.90
Asphalt (Fort)	t	890	33.00	36.25
road matl, prime (MC)	gal	42,200	0.18	0.17
(RC)	gal	7,100	0.19	0.20
Stone scr, type 1	t	390	7.00	6.00
Asph surface, PM	t	13,730	3.25	3.00
ditch paving, PM	t	150	20.00	12.00
Concrete pavement, 8"	sy	4,990	6.50	6.50
Sand for mortar	t	600	7.00	20.00
Timber, treated, bridge	Mbf	3	600.00	600.00
Concrete, class A	cy	5,442	61.00	67.00
Cement for mortar	bbl	430	23.00	26.50
white	bbl	210	33.00	38.00
Steel, reinforcing	lb	667,100	0.13	0.13
structural	lb	913,900	0.18	0.165
tunnel	lb	431,500	0.165	0.23
Rock bolts (1x96")	ea	470	11.00	23.25
(1x72")	ea	1,070	10.50	14.75
Pipe, relay 24"	lf	112	3.00	5.00
CMP, 6"	lf	292	2.00	2.25
8"	lf	42	3.00	4.00
18"	lf	300	5.00	4.50
24"	lf	1,470	7.00	6.60
Steel pile, 10 BP 42	lf	405	7.00	7.25
12 BP 53	lf	1,329	8.00	8.00
Slope & ditch paving, grtd rubble	cy	9	40.00	30.00
concrete (WM)	cy	130	40.00	40.00
Riprap	cy	1,880	3.00	4.00
Underdrain, 8" CMP, perf	lf	2,056	6.00	7.00
unperf	lf	400	2.50	3.50
Met pl gd fence (beam)	lf	250	4.25	4.00
Fence w tr wood post, barbed wire	lf	1,100	0.30	0.40
comb wire	lf	4,400	0.45	0.45
Barrier fence, met post	lf	4,500	0.30	0.35
Driveway gates	ea	1	50.00	65.00
Chain link fabr (120")	lf	800	3.00	3.00
(36")	lf	500	2.00	2.30
Sheet copper	lb	22	5.00	3.00
Concrete curb	lf	2,780	1.00	1.05
Conc comb curb & gut (1)	lf	176	2.00	1.95
(11)	lf	161	2.50	2.20
sidewalks	sf	4,170	0.55	0.52
Drain pipe, 4" (—4 ft)	ea	33	12.00	10.00
Elec cond w junct box, 1½"	lf	200	1.25	1.50
Timber guard posts	ea	247	6.00	8.00
Drain tubes, 4"	lf	380	3.00	5.00
Galv pipe, std. 2"	lf	468	1.10	2.00
Polyethylene pipe, 2"	lf	292	2.25	3.00
Manhole	ea	2	275.00	250.00
Inlet grating & frame, median	ea	10	70.00	65.00
#13	ea	1	105.00	100.00
type 2, E P	ea	1	100.00	100.00
Manhole ring & cover	ea	4	65.00	100.00

Commence: 3-15-60. Complete: 300 cal days.

PRECISION AND SKILL



★ Close-up view of an IRVICO pressure-locked aluminum grating carefully engineered to fit precisely around pipes and valves in a modern water-pumping station.

★ ★

GO INTO A GOOD GRATING

When you specify IRVICO grating, you receive the benefit of engineering and manufacturing skill developed during more than 57 years of experience in the production of grating. Each IRVICO order is given careful engineering attention. Experienced shop craftsmen execute your order with finesse, and our inspectors permit no grating to be shipped unless it meets your specifications and our high standards. This insures high quality grating, an excellent fit, and no extra installation costs. Catalog on request

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902
Offices and Plants at:
5063 27th St., LONG ISLAND CITY 1, N.Y.
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"DEEP-STRENGTH"
ASPHALT CONSTRUCTION

...a giant step forward in basic highway design

- Lower stresses on subgrade
- Reduces total pavement structure thickness
- Improves many lower-quality aggregates*
- Is not susceptible to frost damage
- Protects subbase from rain during construction
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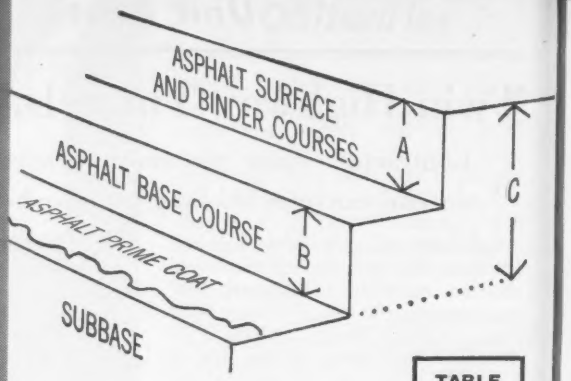
- Furnishes better drainage
- Prevents wheel-track rutting
- Provides for stage construction
- Improves surface riding qualities
- Increases driving and parking safety

**For use in areas where high-quality aggregates are in short supply.*

SUMMARY OF **ADVANCED**



PAVEMENT DETAIL

TABLE 1

Recommended Minimum Thicknesses of Surface-Plus-Binder and of Base Courses (inches)*

TRAFFIC	A**	B w/ Asph base	B w/o Asph base	C w/ Asph base	C w/o Asph base
Very Hvy	4	4	6	8	10
Heavy	3	3½	5	6½	8
Medium	3	2	3	5	6
Light	2	2	3	4	5

**For thickness of subbase and improved subgrade courses, see Asphalt Institute Manual Series No. 1.*

***May be reduced by substitution of Asphalt base of comparable strength on inch-for-inch basis.*

"THE INCREASING STRESSES now being imposed on pavements by modern heavy traffic with average tire contact pressures as high as 100 psi or more, and the anticipated future increase in wheel coverages indicate that general improvements in design and construction must be made. To meet this need, The Asphalt Institute calls to the attention of highway designers the Advanced Design Criteria given in broad detail above and designated, 'Deep-Strength' Asphalt pavements. The Institute strongly recommends the adoption of these Advanced Design Criteria in the construction of all future heavy-duty Asphalt pavements. For detailed data, you are urged to contact The Asphalt Institute District Engineer in your area."

Irwin S. Wellborn

CHIEF ENGINEER

DESIGN CRITERIA for "DEEP-STRENGTH" ASPHALT PAVEMENTS

RECOMMENDED MINIMUM COMPACTION CRITERIA* (summary)

TABLE 2

Non-Asphalt Courses

COURSE	MINIMUM (% modified AASHO Density)
Subgrades (layers not to exceed 6 inches)	
Cohesive	95%; top 12 inches 90%; balance of fill (When optimum moisture is near plastic limit, compact at moisture content approximately 1% below theoretical optimum).
Cohesionless	100%; top 12 inches 95%; balance of fill
BASES, SUBBASES AND IMPROVED SUBGRADES (Layers not to exceed 6 inches)	
All	Compaction load and contact pressures as high as material will support without undue rutting or displacement.
(*proof roll with heavy rubber-tire rollers*).	

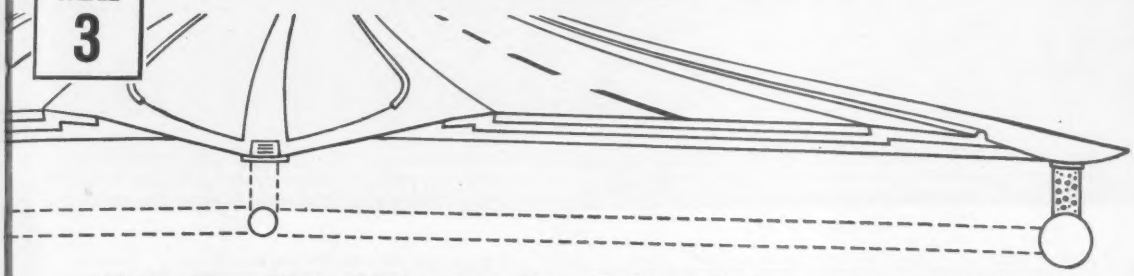
ASPHALT COURSES (base, binder, surface)

COURSE	MINIMUM CRITERIA
SUPPORTING COURSES	Flat steel-wheel rollers to be supplemented with pneumatic tire rollers having average tire contact pressures of 85-110 psi
SURFACE COURSES	Same as for Supporting Courses.

**For detailed information see The Asphalt Handbook, Manual Series No. 4.*

TABLE 3

FULL-WIDTH DRAINAGE (Typical Cut Section)



The new Advanced Design Criteria recommend better surface and subsurface drainage. For better *surface* drainage full-width paving is recommended. On elevated grades the water should be directed to Asphalt spillways by means of Asphalt dykes or curbs constructed on the extreme outside edge of the shoulder.

For better *subsurface* drainage a depressed median is recommended wherever possible. If conditions make it mandatory to construct an elevated median, transverse drains should be connected with a longitudinal drain in the median deep enough to collect all ground water before it can find its way into the pavement structure.

NEW HANDBOOK! Now on the presses is a new edition of *The Asphalt Handbook*. It incorporates all the Advanced Design Criteria for highways implied by the term **Deep-Strength** Asphalt Construction. It also includes the latest design and research data concerning other major uses of Asphalt . . . for ditch linings, embankment facings, etc. Copies will soon be available at The Asphalt Institute office serving your area.

ENGINEERING · RESEARCH · EDUCATION
THE ASPHALT INSTITUTE

THE ASPHALT INSTITUTE

Executive Offices and Laboratories
Asphalt Institute Building, College Park, Md.

ENGINEERING AID. The Asphalt Institute has District Engineering offices in the following locations. Call on your District Engineer to discuss your Asphalt problems at any time.

DIVISION I—ATLANTIC—GULF
NEW YORK 20, N. Y., 1270 Avenue of the Americas
BOSTON 16, MASS., 419 Boylston St.
ALBANY 7, N. Y., 11 North Pearl St.
HARRISBURG, PA., 800 North Second St.
RICHMOND 19, VA., Travelers Building
ATLANTA 9, GA., 881 Peachtree St., N.E.
MONTGOMERY 4, ALA., 79 Commerce St.
NEW ORLEANS 18, LA., Maison Blanche Building

DIVISION II—OHIO VALLEY—GREAT LAKES
COLUMBUS 15, OHIO, Neil House
LANSING 16, MICH., 109 West Michigan Ave.
LOUISVILLE 7, KY., 4050 Westport Road

DIVISION III—MIDWEST
CHICAGO 39, ILL. 6261 West Grand Ave.
SPRINGFIELD, ILL., 2606½ South Sixth St.
KANSAS CITY 3, KANS., 2500 Johnson Drive
DENVER 2, COLO., 1031 15th St.
PIERRE, S. DAK., 104 S. Euclid Ave.
HELENA, MONT., Power Block

DIVISION IV—SOUTHWEST
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AUSTIN 1, TEX., Perry-Brooks Building
OKLAHOMA CITY 2, OKLA., Republic Building
SANTE FE, NEW MEXICO, 10 Radio Plaza

DIVISION V—PACIFIC COAST
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OLYMPIA, WASH., National Bank of Commerce Building
SACRAMENTO 14, CALIF., Forum Building

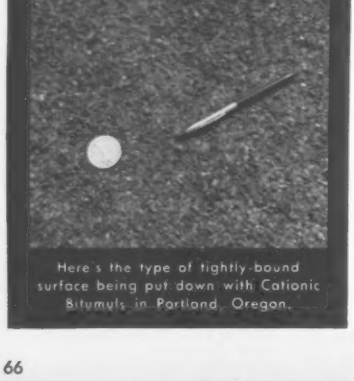
Portland Profits By Resurfacing Streets With CATIONIC BITUMULS

Distributor applies Cationic Bitumuls at 0.2 gal./sq. yd. Note "skirt," designed to protect against drift or splash.

Truck immediately applies 25 lbs. of cover stone (¼"-#10) using tail-gate spreader. Two passes by three-wheel steel roller completes job.

The City of Portland, Oregon, is about to complete its second successful season of Single Surface Treating city streets using Cationic Bitumuls.

Last year, Cationic Bitumuls was used on more than 80% of a total of over one million square yards of such work. Costs averaged out at about 12 cents per sq. yd. as opposed to 16½ cents for similar work using an asphaltic cutback. This year, the program will include at least 800,000 square yards. Conservatively, this means a saving of over **$70,000 in two years!**



Here's the type of tightly-bound surface being put down with Cationic Bitumuls in Portland, Oregon.

WHERE THE ECONOMY DEVELOPS

According to officials in Portland, the savings can be traced to the following factors: less aggregate required; smaller crew; less binder; faster operation.

In addition, Cationic Bitumuls holds even siliceous aggregates. And it extends the working season because it gives extra protection against wash-off of binder when early rain is encountered.

FUTURE PLANS

Current plans call for a continuing program involving the resurfacing of 50 to 60 miles of streets each year. At this rate the City will continue to save approximately $35,000 per year as compared to earlier methods.

Investigate the benefits of using Cationic Bitumuls in your street and road work. Call our nearest office for full information, today. Your community, too, can **profit** just as Portland is doing.

American Bitumuls & Asphalt Company

320 MARKET, SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

Materials Prices

Monthly Market Quotations By ENR Field Reporters

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized
Atlanta	$186.10ps	$154.95pkks	$309.90ps	$348.65ps	.....	.....	$33.20uu	$36.70uu	$36.50hh	$28.50hh	$28.50hh
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.80	23.40	.....
Birmingham	135.00pss	152.00pss	.....	303.00p	376.00p	465.00p	27.00ff	38.00jj	38.28mm	20.87mm	26.33gmm
Boston	232.00†mm	248.00†mm	463.25†mm	556.00†mm	.....	.....	43.50p	58.00p	42.00§	34.00§	.....
Chicago	137.00ll	149.00ll	280.00ll	.....	.....	.....	32.00	34.00	38.00ll	35.20ll	.....
Cincinnati	179.00mmyy	190.00†mmyy	355.00jddmm	390.00†mmyy	422.00†mmyy	500.00†mmyy	48.00jk	47.00jk	29.10†mm	29.10†mm	29.10†mm
Cleveland	205.00tt	219.00tt	.....	465.00tt	.....	709.00tt	41.75tt	45.75ggtt	32.75ptt	28.00ptt	.....
Dallas	155 00	155.00	306.00	370.50	452.25	560.00	30.00	50.00	41.80	24.58	28.50
Denver	170.00	185.00	310.00	310.00	390.00	442.00	35.00zz	54.00	48.00p	42.00p	46.00p
Detroit	257.00mm	274.00mm	514.00mm	582 00mm	767.00mm	876.00mm	53 50pmm	54.00pmm	38.00mm	30.00mm	40.00mm
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	34.00	34.00	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	38.00uu	.....	38.00nnll	38.00nnll	39.00nnll
Minneapolis	208.00pe	225.00pe	452.00pe	225.00pwe	.....	.....	49.00ype	57.50ype	50.00bbe	40.00bbe	52.00bbde
Montreal	168.78auqoo	180.93auqoo	325.00auqoo	220.00qoo	400.00qoo	.....	48.25bll	56.30bll	39.00	22.00	13.25
New Orleans	198.00	198.00	370.00	370.00	.....	.....	42.00	55.00	44.00	32.00	32.00
New York	185.00h	197.00h	294.00ch	297.00hx	.....	.....	46.00p	.....	40.00p	38.00p	.....
Philadelphia	202.10ss	215.60ss	404.20sszz	485.10ss	.....	.....	42.00mm	50.00mm	40.00mmp	21.50	21.50
Pittsburgh	200 00t	213.00t	400.00t	453.00t	607.00t	693.00t	39.00t	46.00t	38.00t	33.00t	34.00t
St. Louis	180.00mmpp	190.00pp	385.00pp	401.00ppp	459.00pp	631.50pp	44.00mmpp	45.50pp	1.00aapp	.80aapp	1.35aapp
San Francisco	156.85*mm	177.10*mm	235.30dd*mm	159.40qqmm	.....	.....	43.00*mm	43.00*mm	29.24mm	29.24mm	31.74mm
Seattle	235.00pt	270.00pt	490.00pt	265.00pwt	.....	.....	57.00t	71.00t	52.00bbt	38.00bbt	4.50mbbt
Toronto	158.00rr	173.00rr	336.00rr	263.00frr	378.00rr	.....	27.00rr	65.00rr	42.00mm	38 00mm	36.50mm

*§ F.o.b. yard. **e F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hot. *e less 5% disc., 10th., *f 8 x 8 x 12. *g Lumps, $26.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *l Red face. *m Per bbl. 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra (6%). *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 2½ disc., cash. *ii F.o.b. plant. *jj rough; smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2% 30 days. *pp add 2% sales tax. *qq 8 x 8½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢/M. 10 days *vv 4000 pcs. and over.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. in 100 lb. cases In oil	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$13.75ggJO	$24.00ggJ	$3.59	$3.86	$3.31	$2.90kk	$2.25kk	$3.85kk	$0.67kk	$65.35kk
Baltimore	17.50ff	24.00	3.00	4.40	3.50	3.06	3.67	4.04	.50	54.00
Birmingham	26.00†J	29.00†J	3.90J	3.40J	....	3.08†mm	3.28ii†mm	2.28ii†mm	.75ffmm	45.00eemm
Boston	24.95†oomm	26.90†mmm	....	....	....	3.70g	2.45g	2.83g	.55g	58.00g
Chicago	15.25rJqqpp	24.00†J	....	....	....	3.80ukk	2.76akk	3.00okk	48.00bbkk	57.70†kk
Cincinnati	15.25†JO	24.00†J	....	....	....	2.87mm	2.02omm	2.42omm	.428ymm	55.96Hmm
Cleveland	25.65†	26.90†	2.65ggP	2.81ssgg	3.46ggg	2.74q	2.11o	2.42o	.39y	49.60gg
Dallas	22.50	23.50M	....	3.25B	....	3.00u	3.00o	3.00o	.470	66.00hh
Denver	23.00n	24.00	3.98	5.20	3.70	2.71	1.93o	2.80o	.50ff	50.00
Detroit	15.75r	24.00rr	2.70mm	3.95mm	3.70mm	2.82mm	2.05mmll	2 42mmll	.56ffmm	49.00mm
Kansas City	26.90lggoo	25.65	3.99	3.43	3.01	4.60mm	3.13omm	3.13omm	.92y	.....
Los Angeles	16.25yy	22.00	3.30n	4.50n	4.20n	3.40nkk	2.40niikk	l	.75myykk	l
Minneapolis	16.75N	21.50kk	....	....	....	2.50kk	1.95hiikk	2.36hikk	.416kkk	50.00rkk
Montreal	19.45O	26.00wtt	5.52Dff	6.55zff	5.10kff	5.40	4.65f	4.65f	1.60	4.40uu
New Orleans	23.00Jpp	24.00J	....	....	....	2.78	1.98	2.85	.680	45.50
New York	15.25ooO	29.75	....	....	....	2.79xx	2.05xxo	2.46o	.52s	49.00*
Philadelphia	16.25Omm	24.75mm	3.35mm	3.90mm	2.65Rmm	4.70	3.60	2.85	.515	50.00
Pittsburgh	21.00mgoJ	24.00J	2.20†EJ	2.25†FJ	2.25†GJ	3.57eH	2.75eH	2.95H	.48H	55.00H
St. Louis	25.65†m	26.90	....	....	....	3.28iimm	2.35hhK	2.82hhK	.43yK	62.00K
San Francisco	26.70mm	26.90mm	3.20mm	4.30mm	3.80mm	2.87mm	1.72aaiimm	2.59mm	.46jj	54.00
Seattle	13.35HO	24.00H	....	4.19ccffJ	....	3.70qccH	3.06hccH	....	.55cc	.....
Toronto	14.45	20.65	5.15J	6.18J	5.95J	3.00	2.40aae	2.40o	1.01j	50.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e Per 108 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 50 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. *yy Sept. revised to $12.00. * zz Sept. revised to $2.80. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 95%. *D Std. black. *f Milt. spec.: ETTP27; FTTY81; GTTP31. *H less 2% disc., cash. *I Per 100 lb. *J less 1% disc., 10 days. *K add 2% sales tax. *L CL. *M 1 ton or more. *N under 500 lbs, add $1. *O 50 lb. bag.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE† Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM Flat .100" th 36"x108" & 48"x144" per lb/pt	SHEET† Corr roof .032" th 35"x12' per shu	STAINLESS STEEL† SHEET-TYPE 302p 20 ga 48"x96"–120" per cwthb	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ⅜ b	½"c
			per bag of 4 cu ft										
Atlanta	$32.00ss	$42.00ss	$1.55ss	$1.65ss	$1.80zlss	$1.65ss	$1.65ss	$0.463nno	$27.17nY	$65.68nzz	$74.43nzz	$0.1762ss	$0.2464ss
Baltimore	24.00	35.70	0.95	1.15	1.15	1.15	1.55	0.462	0.451r	63.00	71.25	0.16	0.23
Birmingham	37.00ss	43.00ss	1.55ss	1.55ss	1.60ls	1.27ss	1.27ls	0.485M	9.62K	67.34K	76.09K	0.20ss	0.27ss
Boston	24.00	30.00	1.40	1.40	1.40	1.55ss	1.55ss	0.462	24 66pAA	64.42dd*zz	72.67dd	0.1762ss	0.2464ss
Chicago	26.80tt	26.80tt	1.55	1.60	1.60l	1 60	1.60	0.516x	32.88p	64.15ee	72.40ee	0.1814	0.2545
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.85*ss	1.85ss	1.90ss	0.514	9.21	65 30zz	74.05zz	0.1814ss	0.2545ss
Cleveland	28.00N	45.00N	1.14ss	1.16ss	1.24lss	1.45ss	1.45ss	0.455aa	8.48	63 33oozz	71.58oozz	0.1814tt	0.2545tt
Dallas	30.65	30.65	1.05	1.21	1.37	1.21	1.32	0.452	0 451r	64 09	72.34	0.1668	0.1986
Denver	27.00	27.00	1.50	1.40	1.50	1.50ss	1.60ss	0.475	10.89	65 32gg	73.57gg	0.1772	0.2380
Detroit	28.00ss	28.00ss	1.27ss	1.31ss	1.40ss	1.45ktt	1.50ktt	0.475a	10 35a	63 00zz*	71.25azz*	0.2058	0.2887
Kansas City	30.00	35.00	1.19E	1.21E	1.29lE	1.21	.....	0.463	24.66ggyyp	67.50E	76.25E	0.1814	0.2545
Los Angeles	27.00tt	28.00tt	1.25ktt	1.20ktt	1.45tt	1.11	1.11	0.515	9.77Z	65.02	73.27	0.1814	0.2545
Minneapolis	35.00F	35.00F	1.65tt	1.80F	1.95F	1.40S	1.50S	0.485	16.23	63 61GR	69.61ffG	0.1446f	0.2025
Montreal	27.60h	35.60h	1.25h	1.40h	1.60h	1.15v	1.15v	43.95AH	12.10H	65.75H	.....	0.1978	0.2089
New Orleans	34.00	48.00	1.25P	1.35P	1.45P	1.21P	1.21P	0.463	24.90	64.00Y	85.60Y	0.1814	0.2545
New York	27.00	35.00	1.40	1.35	1.40	1.35	1.45	0.485aT	0.2466aXAA	64.08ss	72.33ss	0.1723	0.2318
Philadelphia	26 50	31.00ss	1.40ss	1.40ss	1.55lss	1.35ss	1.35qqss	0.485	9.46	63.71	71.96	0.1814	0.2545
Pittsburgh	30.00nn	33.00nn	1.50nn	1.50nn	1.50mm	1.50nn	1.50nn	0.452	9.46	64.00	76.25pp	0.1600	0.1800
St. Louis	30 00uu	42.00uu	1.50uu	1 60uu	1.65uu	1.50uu	1.60uuY	0.475	10.69	65.39Kmm	71.89yuu	0.1814fmss	0.2545fmss
San Francisco	29.50ss	30.50ss	1.38ss	1.38ss	1 50ss	1.38ss	1.58ss	0.575	10.83	65.00K	77.25K	0 1814	0.2545
Seattle	42.40nn	45 60nn	1.55nn	1.35knn	1.85lnn	1.50k	.....	0.46D	10.40D	54.02D	73.27D	0.1756	0.2460
Toronto	.82	1.31	1.45	1.45	1.60	1.20Q	.....	0.4295	26.00ap	73 74	86 52	0 3063	0.3418

‡trucklots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ⅝" O.D. *d per sf *e 34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 36" x 108";–10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x 0.11"th *y 27 gauge *aa 16M lb & up *bb Per 50 lb bag *dd add $1.00 cwt boxing *ee 4 tons & up *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 60.4-lb. per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *C 15M lb. *D less ½% for cash. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½%, 10 days. *L 5% disc. 30 days. *M 3003: .452 for 1100. *N less 2% 15th mo. O less $2, cash & carry. *P less 2%, 15 days. *Q per ton. *S add .10/bag under 200 bags. *T 5000# quantity on 4000# skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity. *X per sq ft. *Y Per sheet. *Z 6,000 lb or over. *AA 30,000 sf or over.

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$1.90	$1.90	$3.90	$3.25	$3.45+7½¢	$3.60	$3.30	$3.50+10¢	$3.80+20¢	$1.90	$2.00	$2.25*B*
Baltimore	2.27+7½¢	2.27+7½¢	4.10+10¢	3.50+7½¢*f*	3.90+7½¢	3.35/4.05+10¢*A*	3.80+10½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.85	1.95	3.95	3.15	3.50+10¢*m*	3.18	3.27	3.65	3.58+12½¢*p*	1.90	2.10	2.35
Boston	2.65+10¢	2.55+10¢	3.80+20¢	3.55+10¢	4.02+20¢	4.05+20¢	3.65+45¢	3.90+25¢	3.95+27¢*R*	2.70+8¢	2.70+8¢	2.70+8¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.07½+7½¢	3.75+20¢*o*	4.15+16¢*n*	3.75+5¢	3.95+23¢	4.10	3.95+24¢	2.55+175¢*R*	.....	.....
Cincinnati	2.75	2.65	3.90+10¢	3.75*D*	3.80+10¢	3.475/3.70*A*	3.725+.04	3.97+39½	3.95+9½¢	2.55+62½¢	2.60+6½¢	2.65+6½¢
Cleveland	3.37*b*	3.285*b*	4.085+10¢*b*	4.11*b*	4.01+10¢*b*	4.11*b*	4.11*a*	4.17*b*	3.91+20¢*b*	2.92+15¢*m*	2.92+15¢*a*	2.92+15¢*a*
Dallas	1.80	1.80	4.00	3.35*b*	3.55+7½¢	3.50*B*	3.75+13¢	3.50+7½¢	3.575+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.50	3.41+7½¢	3.25	3.75+12¢	4.05+14¢	3.95+10¢	2.40*B*	2.75*B*	2.90*B*
Detroit	2.80+42¢	2.80+42¢	3.90+30¢	3.55+42¢	3.90+22½¢	3.55+36¢	3.60+34¢	3.90+47	3.835+17½¢	2.95	2.95	2.95
Kansas City	2.455	2.505	3.95	3.625	3.55	3.445	3.75	3.75+355¢	3.80+9½¢	2.555	2.555	2.63
Los Angeles	2.88+10¢	2.88+10¢	4.00+25¢	3.60+20¢	4.07½+23½¢	3.61+15¢	4.125+42½¢	4.40+44	4.10+52¢	3.15½+10¢	3.15½+10¢	3.345+10¢
Minneapolis	2.70	2.70	3.875	3.45	3.62	3.45	3.50+33¢	3.55+39¢	3.62+20¢	2.70	2.70*d*	2.85
New Orleans	1.85*e*	1.85*e*	3.67+7½¢*d*	3.20*d*	3.50+7½¢*d*	3.325+7½¢*d*	3.19+5¢*jk*	3.77+7½¢	3.60+17½¢*dl*	3.32+7½¢*d*	3.32+7½¢*d*	3.32+7½¢*d*
New York	3.30+26¢*c*	3.30+26¢*c*	4.80+44¢	4.40+35¢*k*	4.60+47¢*j*	4.65+37¢	4.50+62¢	4.45+1.424	4.50+54¢	2.35+22½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.50	2.40+10¢	4.10+17¢	3.785	4.30+23¢	3.935/4.215+10¢*A*	4.15+15¢	4.37½+16¢	4.10+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.575+20¢	2.425+20¢	4.30+20¢	3.775+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.60+34½¢	4.00+20¢	2.50+20¢	2.635+20¢	2.735+20¢
St. Louis	2.775+10¢	2.775+10¢	4.05+32½¢	3.725+10¢*c*	3.75+7½¢	3.825	3.90+07½¢	4.11+31¢	4.07½+22½¢	2.80+12½¢	2.80+12½¢	2.80+12½¢
San Francisco	2.865+10¢	2.865+10¢	4.25+42½¢	3.55+30½¢	4.075+22½¢	3.60/3.76+28¢	3.79+63¢	4.22+29¢	4.14+59¢	3.00+11¢	2.75+20	2.89+20¢
Seattle	3.15+10¢	3.15+10¢	4.15+10¢	3.38+20¢	3.76+10¢	3.59+20¢	3.72+30¢	3.80+26¢	3.81+24¢	3.15+20¢	3.15+20¢	3.35+20¢
Montreal	1.65+4¢*q*	1.65+4¢*q*	2.45+5¢*q*	2.25+5¢*q*	2.55+6¢	2.35+5¢	2.65+6¢	2.45+5¢	2.62+6¢*s*	1.65+4¢	1.65+4¢	1.65+4¢
Toronto	1.85+7¢	1.85+7¢	3.00+12¢	2.80+11¢	2.90+12¢	3.05+12¢	3.00+20¢	3.30+13¢	3.20+13¢	1.90+14½¢	1.90+14½¢	1.90+14½¢

	Tractor Operators incl. bulldozer: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.00	$3.075	$3.075	$2.925	$3.45	$3.60	$2.925	$2.85	$2.00
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	3.18	3.18	3.18	3.18	3.18	3.18	3.18	2.77	2.05
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.50+5¢	3.65+5¢	3.70+5¢	3.70+5¢	4.10+5¢	4.10+5¢	3.70+5¢	3.55+5¢	3.70+5¢
Cincinnati	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.70+10¢	3.70+10¢	3.70+10¢	3.70+10¢
Cleveland	3.86*b*	3.86*b*	3.86*b*	3.86*b*	4.11*b*	4.11*b*	3.86*b*	3.735*b*	3.735*b*
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.225*h*	3.225*h*	1.80/2.625	1.95	1.95
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.60
Detroit	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+38¢	3.55+38¢	3.55+36¢	3.275+15¢	2.93+34¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15¢	3.91+15¢	3.91+15¢	4.01+15¢	4.01+15¢	4.01+15¢	4.01+15¢	3.13+15¢	3.09+10¢
Minneapolis	3.08	3.30	.....	3.30	3.52	3.78	3.08	2.97	2.85
New Orleans	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	2.675+7½¢*d*	1.95*e*
New York	4.025+32¢	4.025+32¢	4.025+32¢	4.15+33¢	4.90+39¢	4.90+39¢*k*	4.15+33¢	4.15+33¢	4.15+21¢
Philadelphia	3.52+10	3.665+10	3.665+10	3.79+10	4.215+10	4.215+10	3.765+10	3.41+10	2.35
Pittsburgh	3.565+15¢	3.565+15¢	3.565+15¢	3.565+15¢	3.765+15¢	3.765+15¢	3.765+15¢	3.275+15¢	2.435+20¢
St. Louis	3.825	3.825	3.825	3.825	3.825	3.825	3.825	3.275	3.275
San Francisco	3.79+28¢	3.79+28¢	3.79+28¢	3.92+80¢	4.08+28¢	4.08+28¢	3.98+28¢	3.29/3.66+28¢	2.955+20¢
Seattle	3.56+20¢	3.56+20¢	3.56+20¢	3.56+20¢	3.93+20¢	3.93+20¢	3.65+20¢	3.29+20¢	3.20+10¢
Montreal	1.85+4¢	2.08+5¢	2.08+5¢	2.08+5¢	2.35+5¢	2.35+5¢	2.08+5¢	1.95+4¢	1.95+4¢
Toronto	2.30+10¢	2.40+10¢	2.40+10¢	2.40+10¢	2.90+12¢	3.05+12¢	2.70+11¢	2.40+10¢	2.40+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.95, ENR Common Average $2.642

Description of fringe benefits last appeared Sept. 17 1959. *A 1-2 drum.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; 8¢ l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 8¢ o Jun. 30; 22½¢ s Apr. 1; 15¢ 1959: c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65.00*F*	$55.00*F*	$42.50*F*	$68.00*F*	$72.00*F*	$127.00*F*	$75.00*F*	1.59*z*	$70.00*F*	$2.00	$80.00*F*	$4.77*qi*	.....
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40*F*	67.50*F*	1.60*F*	47.00*F*	4.00*F*	$33.50*P*
Birmingham	68.90*H*	57.00*H*	47.77*H*	75.00*H*	67.50*H*	140.50*H*	83.50*H*	1.40	70.00	1.60	75.00	3.77*gG*	.....
Boston	60.00*mH*	50.00*mH*	35.00*mH*	55.00*mH*	65.00*H*	120.00*H*	79.00*knH*	1.40*bH*	75.00*H*	.....	75.00*H*	5.30*zHS*	53.50*gH*
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65	5.25*j*	.....
Cincinnati	52.50*wH*	42.85*wH*	33.05*wH*	51.16*wH*	77.00*wH*	125.00*wH*	72.50*wH*	1.45*wH*	62.50*wH*	1.45*wH*	62.50*wH*	3.28*juJ*	50.00*wJ*
Cleveland	62.00*CF*	56.50*CF*	41.50*CF*	65.00*CF*	80.00*CF*	129.00*CF*	80.00*CF*	1.40/1.55*H*	75.00*H*	.....	67.00	12.50*ioJ*	55.00*J*
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.69	1.45	70.67	5.00*gAG*	45.00
Denver	66.50*H*	58.50*H*	45.00*H*	68.75*H*	84.00*H*	130.00*H*	84.00	1.50*b*	65.00*wb*	1.75*b*	65.00*a*	5.25	48.65
Detroit	66.00*K*	56.00*K*	42.45*K*	66.00*K*	62.50*DK*	103.50*DK*	62.50*DK*	1.30*b*	50.00	1.95*b*	80.00	.....	.....
Kansas City	72.00*H*	62.00*H*	45.00*H*	.....	75.00*H*	122.00*H*	80.00*H*	1.40*H*	75.00*H*	1.80*H*	75.00*H*	3.60*d*	53.98
Los Angeles	66.00*F*	60.50*F*	0.33*zF*	64.50*F*	75.00*F*	125.00*F*	80.00*F*	76.00*BeF*	83.00*F*	1.35*a*	64.00	4.40*g*	7.45*V*
Minneapolis	75.00*F*	65.00*F*	0.44*zL*	75.00*F*	95.00*F*	130.00*F*	78.00*F*	2.25*yF*	80.00*F*	2.10*F*	80.00*F*	4.95*F*	.....
Montreal	58.00*M*	49.30*M*	37/41.50*M*	53.00*M*	64.75*M*	.....	58.50*M*	1.50*M*	66.00*M*	1.50*M*	66.00*M*	9.00*qM*	56.00*M*
New Orleans	57.00*H*	52.00*H*	45.00*H*	60.00*H*	67.00*H*	140.00*H*	80.00*H*	2.00*L*	70.00*	.....	.....	.....	52.12*U*
New York	65.00*H*	55.00*H*	42.50*H*	66.00*H*	78.00	124.00	78.00	1.55*b*	68.50*k*	.....	.....	4.38*iH*	40.00*cH*
Philadelphia	53.00	46.00	37.50	53.50	70.00	120.00	70.00	1.35	50.00	1.40	50.00	3.85	83.50
Pittsburgh	74.00*K*	65.00*K*	40.00*K*	63.00*K*	63.00*K*	103.35*K*	58.10*K*	1.10*sK*	55.00*K*	1.10*sK*	55.00*K*	4.20*iqK*	38.50*K*
St. Louis	65.00*HO*	55.00*HO*	40.00*HO*	70.00*HO*	74.00*HO*	120.00*HO*	80.00*HO*	1.35*yHO*	75-81*HO*	2.09*PHO*	77.00*HO*	4.50*iqHO*	.....
San Francisco	60.00*F*	49.00*F*	0.36*zF*	61.00*F*	70.00*F*	111.00*F*	69.00*F*	1.75*F*	66.50*F*	1.75*F*	66.50*F*	5.10	60.00*F*
Seattle	66.80*K*	57.65*K*	51.05*K*	65.00*K*	74.50*K*	125.00*K*	73.50*K*	1.15*tK*	58.00*K*	1.90*pK*	51.00*qKk*	4.25*K*	46.50*EK*
Toronto	58.00	50.00	45.00*L*	67.50	79.00*T*	.....	88.00*T*	1.85	72.00	.....	72.00	14.75*o*	46.00

** F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 26# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags, *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll.

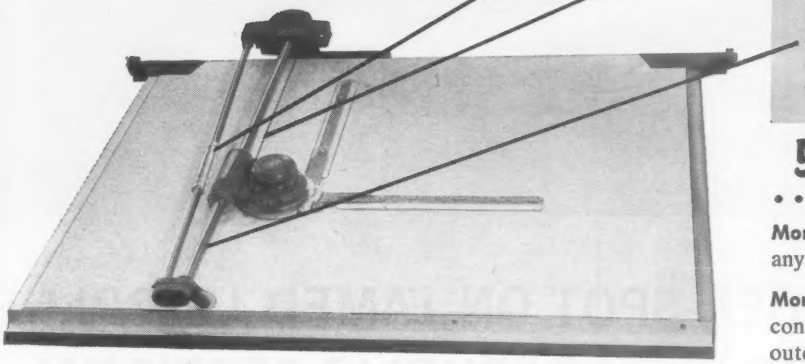
MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)a		Apr. '60
Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor,	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

*a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)	Apr. '60
Struct. steel shapes, fob Monterey	
I-beams, 3 x 3 x 4"...per metric ton	2700.00
Reinf. steel, corrugated rods, per ton	
⅜"-½" x 11 meters consolidada	2050.00
¼"-1" x 11 meters	1950.00

	Apr. '60
Gravel, truckload, per cu meter	
Blue gravel...per M sq. ft.	30.00
Cement, std. port. (Tolteca)...per metric ton	245.00
Lumber, 2" x 4" 1st class pine 20 ft. . .per M sq. ft.	3400.00
2" x 4" 2nd class pine...per M sq. ft.	2500.00



3 Ways Better

Horizontal positioning lock now centrally located to permit locking or releasing while seated.

Improved cable attachment and increased cable strength provide maximum protection against breakdown, cable-snapping, and the wear and tear of constant use.

Larger diameter vertical rail and attendant structural improvements afford increased rigidity for sharper, surer work.

5 Ways the Best

More Versatile – perfect balance at any board angle.

More Compact—advanced travel-rod construction completely eliminates outdated cumbersome counterbalances projecting over top of board.

More Adaptable – gives maximum sweep of *any* size board – even the largest wall models.

Better Made – as with every K&E product, precision engineering throughout . . . rigid construction means truer lines, more accurate work . . . glides smoothly on fine-ground stainless rails . . . all glide controls are readily adjustable for any touch, any board.

For Easier Use—scales move instantly at the lightest touch from one position to another . . . long lines can be drawn in a single motion, up, down or across . . . scales *lock* in place to eliminate drift . . . less tiring . . . smooth, feather-light action *actually reduces* number of arm and hand motions necessary to produce a finished drawing.

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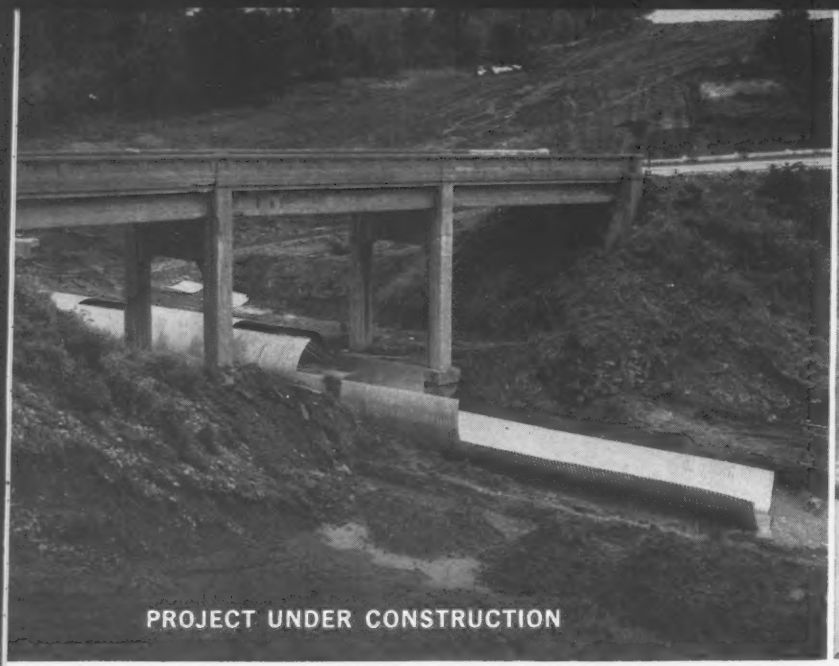


PROJECT UNDER CONSTRUCTION

PROJECT COMPLETED

DANGER-SPOT ON FAMED LINCOLN ELIMINATED WITH REPUBLIC SECTIONAL

A busy cross-country truck route . . . narrow two-lane bridge over a stream . . . blind curve . . . hills in both directions . . . all added up to a real danger-spot that was the scene of many accidents on U.S. Highway 30 west of Lisbon, Ohio.

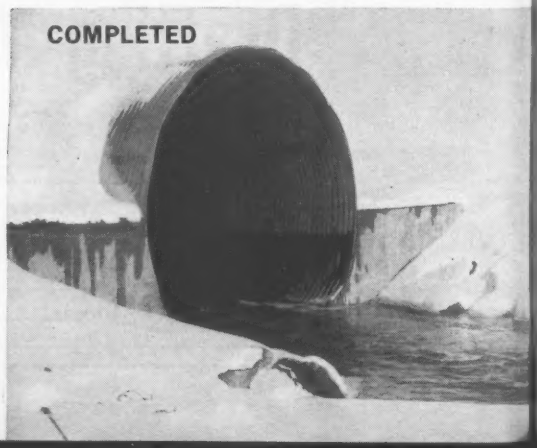
Ohio Department of Highways' solution to the problem: straighten out the road, eliminate the bridge and curves. The bridge was replaced by a full-round Republic Sectional Plate Pipe installation. Assembly was fast and efficient—the pipe was completely engineered and fabricated at the plant, delivered ready for assembly.

Traffic over the old concrete bridge was maintained until the fill was placed around the pipe. It was then diverted to a by-pass road and the bridge was demolished and used as part of the fill.

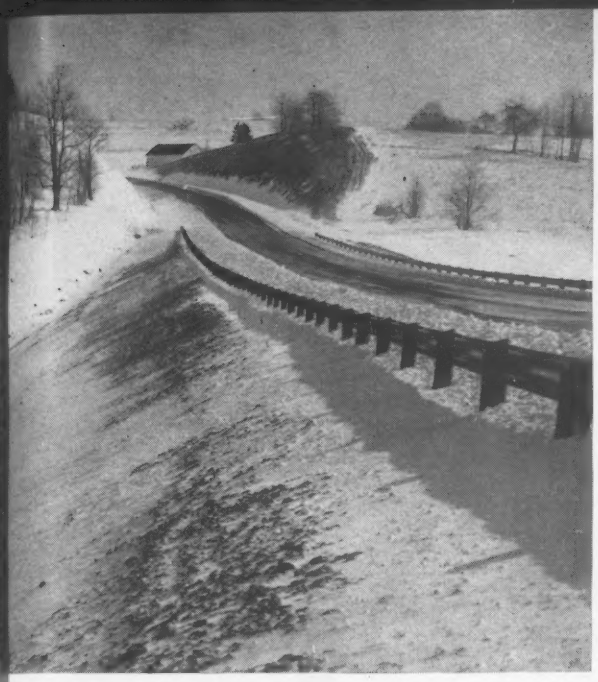
Complete and in service, this Lincoln Highway project is a good example of modern highway engineering and safety planning—using Republic Sectional Plate Pipe to speed completion and keep costs down. For information on problem-solving drainage products to meet your requirements, contact the Republic Sectional Plate Distributor nearest you (see list at right), or mail coupon.

UNDER CONSTRUCTION

FOURTEEN FEET in diameter, 285 feet long, the sectional plate pipe was constructed of 1-gage Republic Copper Steel Plates. A 5% vertical shop elongation eliminated the need for strutting in the field. Lower half of the pipe interior was coated and paved.



COMPLETED



HIGHWAY PLATE PIPE

Distributors of Republic Sectional Plate

Bark River Culvert & Equipment Co.
Escanaba, Mich.

Beall Pipe & Tank Corporation
Portland, Ore. • Boise, Idaho

Bluegrass Pipe & Culvert Co.
Louisville, Kentucky

The Boardman Co.
Oklahoma City, Okla. • Tulsa, Okla.

Carolina Culvert & Metal Div.
Florida Steel Corp.
Statesville, N. C.

Central Culvert Corporation
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Choctaw, Inc.
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Dominion Culvert & Metal Corp.
Roanoke, Va.

Eaton Metal Products Corp.
Omaha, Neb. • Hutchinson, Kan.

Eaton Metal Products Company
Billings, Mont.

Empire State Culvert Corp.
Groton, N. Y.

Garland Steel Co.
Phoenix, Ariz.

Illinois Corrugated Culvert Co.
Bushnell, Ill.

Jansen Bridge & Supply Company
Sandusky, Mich.

H. V. Johnston Culvert Co.
Minneapolis, Minn. • Aberdeen, S. D.

Logansport Metal Culvert Co.
Logansport, Ind.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
Fargo, N. D.

Northeastern Culvert Corp.
Westminster Station, Vermont

Pacific Corrugated Culvert Co.
Sacramento, Calif.
Temple City, Calif.

The Pedlar People, Ltd.
Oshawa, Ont.

Republic Steel Corporation
Culvert Division
Canton, Ohio • Harrisburg, Pa.
Charlotte, N. C. • Hammond, Ind.

Spokane Culvert & Fabricating Co.
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Thompson Pipe & Steel Company
Denver, Colo.

Tri-State Culvert & Mfg. Div.
Florida Steel Corp.
Tampa, Fla. • Decatur, Ga.

Utah Culvert Company
Ogden, Utah

Wisconsin Culvert Company
Madison, Wis.

Wyatt Metal & Boiler Works
Dallas, Tex. • Houston, Tex.

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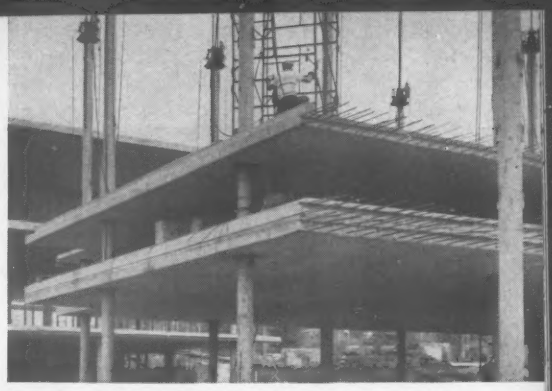

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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ **Mass., Pittsfield** — BA 5/13 — City Sewer Comn., Berkshire County, Courthouse, Contr. 1, main intercepting sewer; Contr. 2, Eastern Intercepting Sewer. Contracts may be bid separately or together. $1,000,000. Plans deposit $25 each. Camp, Dresser & McKee, 18 Tremont St., Boston, engrs. CD 10/28.

BUILDINGS—BA

▲ **Mass., Danvers**—HIGH SCHOOL—BA 5/11—Town, high school, Cabot Rd. $2,000,000. Plans deposit $100. Rich & Tucker Assoc., 45 Newbury St., Boston, archts. CD 3/31/59.

▲† **Me., Jonesport**—HOUSING—BA 5/17—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass., 33 Capehart Housing units, Title IV, at Cutler Radio Station, NBy (CH)22968, Spec. No. 22968/58. Plans deposit $55. CD 1/13/59.

▲ **Vt., Burlington**—LIBRARY—BA 5/19—University of Vermont, 85 S. Prospect St., library, East Campus. $2,100,000. Roland M. Whittier, 108 Shelburne St., archt. Jennison Engineering, Inc., 95 College St., engr. CD 7/15.

▲ **Mass., Bolton**—REGIONAL HIGH SCHOOL—BA 6/1—Nashoba Regional School Dist., Towns Stow, Lancaster and Bolton, Red Acre Rd., Stow, Nashoba Regional High School, Rte. 117. $1,000,000. Plans deposit $75. The Architects Collaborative, 63 Brattle St., Cambridge, archts. CD 8/1/57.

BUILDINGS—LB & CA

▲ **Wright & Morrissey, Inc.,** 263 South Champlain St., Burlington, Vt., LB **$2,116,274,** Proj. Vt-43, CH-12, (D) women's RESIDENCE and men's RESIDENCE, incl. DINING HALL, BURLINGTON, VT. University of Vermont, and State Agricultural College, Waterman St., Burlington, Vt. Bids Apr. 14. CD 3/18.

▲ **C. R. Burns & Son,** 31 Doran Rd., Brookline, Mass., CA **$1,008,727,** est. $1,000,000, ELEMENTARY SCHOOL, LEXINGTON, MASS. Town, 1557 Mass. Ave., Lexington, Mass. Bids Mar. 24, awarded Apr. 14. CD 3/29, under LB.

▲ **Middleton Development Corp.,** 1622 Beacon St., Brookline, Mass., Owner Builds, approx. **$3,330,000.** RESIDENTIAL DEVELOPMENT, Main St., MIDDLETON, MASS. CD 4/14.

▲ **Middleton Development Corp.,** 1622 Beacon St., Brookline, Mass., Owner Builds, Approx. **$1,500,000.** SHOPPING CENTER, Main St., MIDDLETON, MASS. CD 4/14.

▲ **Daniel O'Connell's Sons, Inc.,** 480 Hampden St., Holyoke, Mass., LB **$1,891,124,** HIGH SCHOOL, Wellesley St. and South Ave., WESTON, MASS. Town, School St., Weston, Mass. Bids Apr. 14. CD 3/21.

▲ **George D. Anthony,** et als, 35 Black Rock Ave., New Britain, Conn., Owner Builds, **$1,800,000,** 100 HOUSES, EAST BERLIN, CONN. CD 8/18.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ **Fago Bros.,** 521 Young St., Buffalo, N. Y., LB **$1,785,005,** est. $2,000,000 (10 bidders), water transmission main, BUFFALO, N. Y. Erie County Water Auth., 338 Ellicott Sq., Buffalo, N. Y. Bids Apr. 14. CD 3/25.

▲ **Emerson Garden Electric Co.,** 2901 Lockport Rd., Niagara Falls, N. Y., LB **$2,678,337** (3 bidders), transmission line from Niagara Switchyard to Rochester, Niagara Power Proj. AL5, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Apr. 14. CD 8/15/57.

▲ **Zephyr Contg. Co.,** 7412 New Utrecht Ave., Brooklyn 4, N. Y., CA **$1,318,800,** Cargo Distr. Bldgs. 195 and 196, Contr. P.N.-540.004, PORT NEWARK, N. J. Port of New York Auth., 111 8 Ave., New York 11,. N. Y. Bids 4/12. CD 3/31.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Adam Miller, Inc., R.D. 4, Greensburg, Pa., CA **$3,475,964,** 2.41 mi. Interstate Rte. 70 in Monroeville, Allegheny Co. Bids Mar. 25. CD 3/30, under LB.

BUILDINGS—LB & CA

▲ **Guterman & Friedman,** c/o S. J. Kessler & Sons, archts., 598 Madison Ave., New York 22, N. Y., Owner Builds, **$2,500,000,** four 6 story, 250 family Bay Country Club Garden APARTMENTS, 10 acre tract, Bell Blvd. and 24th Ave., BAYSIDE, N. Y. (Correction—contractor and price.) CD 4/15.

▲ **Siegfried Constr.,** 6 North Pearl St., Buffalo, N. Y., LB **$1,063,269,** general contract Huron PARKING RAMP, BUFFALO, N. Y. City, P. Wks. Comn., 502 City Hall, Buffalo, N. Y. Backus Crane & Love, 232 Delaware Ave., Buffalo, N. Y., archts. Bids Apr. 14. CD 3/22.

▲ **Baton Constr. Corp.,** 1717 Sansom St., Phila., Pa., CA **$3,000,000,** 1 story, 310,000 sq. ft. PLANT, with 2 story OFFICE, U.S. Rte. 1 for Strick Division, TRENTON, N. J. Fruehauf Trailer Co., 30 Rockefeller Plaza, New York, N. Y. Geo. M. Ewing Co., Western Savings Fund Bldg., Phila., Pa., engr.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Georgia and South Carolina**—BA On Or About 8/2—U. S. Eng., 200 East St. Julian St. Savannah Ga., power plant and appurtenant works, Hartwell Project, Savannah River. $5,500,000. Plans deposit $10. CD 9/19/58.

BUILDINGS—BA

▲ **Ala., Birmingham**—HOUSING—BA 5/17—Housing Auth. of Birmingham Dist., 600-N. 24 St., 250 units, low-rent housing, maintenance and storage facilities, Tom Brown Village, $2,500,000. Plans deposit $100. Charles H. McCauley, 1917 5 Ave. S., archt. CD 9/29/55.

▲ **S. C., Greenville**—POSTOFFICE-GARAGE—BA 5/31—U. S. Postoffice Dpt., Bureau Facilities, 12 and Penn. Ave. N. W., Wash., D. C., 109,000 sq. ft. postoffice-garage, Lease-Purchase Project. $1,500,000. J. E. Sirrine Co., 215 S. Main St., archt. CD 10/22.

HEAVY CONSTRUCTION—LB & CA

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge,

Brown & Root, Inc., 4100 Clinton Dr., Houston, Tex., CA **$14,784,049,** twin bridges, prestressed concrete girder and welded composite spans 5.406 mi. Lake Pontchartrain Bridge on Little Woods-Slidell Hy., Rte. I-10.SP N1.740-00-39, FAP No. EI-I-10-5 (18) 258, St. Tammany and Orleans Parishes. Bids Feb. 24. CD 2/29, under LB.

BUILDINGS—LB & CA

▲ **Thompson & Street Co.,** 2622 Piedmont Rd. N.E., ATLANTA, GA., CA **$1,786,000,** CATHEDRAL, ATLANTA, GA., St. Phillip's Episcopal Church, Peachtree Rd. N.E., Atlanta, Ga. Bids Feb. 11. CD 2/17, under LB.

▲† **Kesk, Inc.,** 136 South Derbigny St., New Orleans, La., LB **$5,180,000,** 320 units Capehart HOUSING, Naval Auxiliary Air Station, MERIDIAN, MISS. Dist. P. Wks., Office, 6th Naval Dist., Bldg. No. 13, U.S. Naval Base, Charleston, S. C. Bids Apr. 14. CD 2/19.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported n low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ **Hugh G. Scudder,** Union City, Tenn., LB **$1,582,000,** HOUSING, MURFREESBORO, TENN. Murfreesboro Housing Auth., Murfreesboro, Tenn.

MIDDLE WEST

BUILDINGS—BA

▲ **Ill., Bensenville**—SCHOOL—BA 5/17—Fenton School Dist. 100, 1000 Green St., Fenton High School addn. $1,400,000. Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Zone 3, archts. CD 11/12.

▲ **Wis., Fox Lake**—CORRECTIONAL INSTITUTION—BA 5/26—State Dpt. P. Welfare, Madison, correctional institution, $5,000,000. Plans deposit $50. Curtis, Davis & Assocs., 2475 Canal St., New Orleans 19, La., archts.-engrs. CD 8/24.

BUILDINGS—SLC

▲ **Ill., Aurora**—HOTEL—Hilton Hotels Corp., 720 S. Michigan Ave., Chicago, Zone 5, soon lets contract 1 story, 300 room, brick, stone hotel. $3,000,000. Frazier, Raferty, Orr & Fairbank, 315 James St., Geneva, archts. CD 5/7.

HEAVY CONSTRUCTION—LB & CA

▲ **Foley Constr. Co.,** 5050 Orchard St., Cincinnati, O., LB **$1,285,728** (8 bidders), wid'n. Winton Rd., CINCINNATI, O. Bd. Comrs. Hamilton Co., Courthouse, Cincinnati, O. Bids Apr. 12. CD 3/30.

▲ **Anthony Pontarelli & Sons, Inc.,** 9350 W. Grand Ave., Franklin Park, Ill., LB **$1,231,151,** est. $1,100,000, Spec. 80, 82-60-26, combined sewers, Contract No. 2, Emerald-Normal Aves., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Apr. 11. CD 3/22.

▲ **Lee Constr. Co.,** 6334 N. California Ave., Chicago, Ill., LB **$1,125,000,** (11 bidders), No. 80.85-60-114, North Central Airlines maintenance facilities, O'Hare International Airport, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Apr. 13. CD 4/3.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,

James Cape & Sons, 701 Water St., Racine, Wis., CA **$1,017,121,** base, concrete pavement and Structure B-40-79, 1.073 mi. West Silver Spring Dr. (North 51st St. to North 33rd St.), Contr. 1, Proj. US 0822(8), Milwaukee Co. Bids Feb. 9, awarded Mar. 14. CD 2/16, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Escanaba, Bids opened 4/13,

Mich.—**S. J. Groves & Son,** 3700 Carpenter Rd., Ann Arbor, Mich., LB **$1,650,193,** reconstr. 9.5 mi. US 141 from Baraga-Iron County line north to M-28, Baraga Co. CD 4/1;

Mich.—**Proksch Constr. Co.,** 132 Third Ave., Iron River, Mich., LB **$817,895,** 12.2 mi. reconstr., incl. grading, drainage structures and aggreg. base and bit. surf. M-35 from east to west county line, Haughton Co. CD 3/29;

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.,** Bellefontaine, O., CA Est. $1,100,000, four-level, 800 car GARAGE, Spring St. and Marconi Blvd., COLUMBUS, O. Temple of Goodwill, Inc., 205 N. High St., Columbus, O. Awarded Apr. 12. CD 3/21/57.

▲ **R. S. Ursprung Co.,** Hanna Bldg. Annex, Cleveland 15, O., CA **$2,206,000,** general contract St. Anthony of Padua HIGH SCHOOL and ELEMENTARY SCHOOL, PARMA, O. Catholic Diocese of Cleveland, 1027 Superior St., Cleveland 14, O. Bids Mar. 22. CD 4/1, under LB.

▲ **Stethem Builders, Inc.,** Hilliards, O., Owner Builds, $7,000,000, 500 brick HOMES, Westwood area, WEST JEFFERSON, O.

▲ **Gerhardt F. Meyne Co.,** 308 W. Washington St., Chicago 6, Ill., CA **$1,500,000,** 20,000 sq. ft. CLUB addn., CHICAGO, ILL. Mid-America Club, 130 E. Randolph St., Chicago 1, Ill. Awarded Apr. 1. CD 3/22.

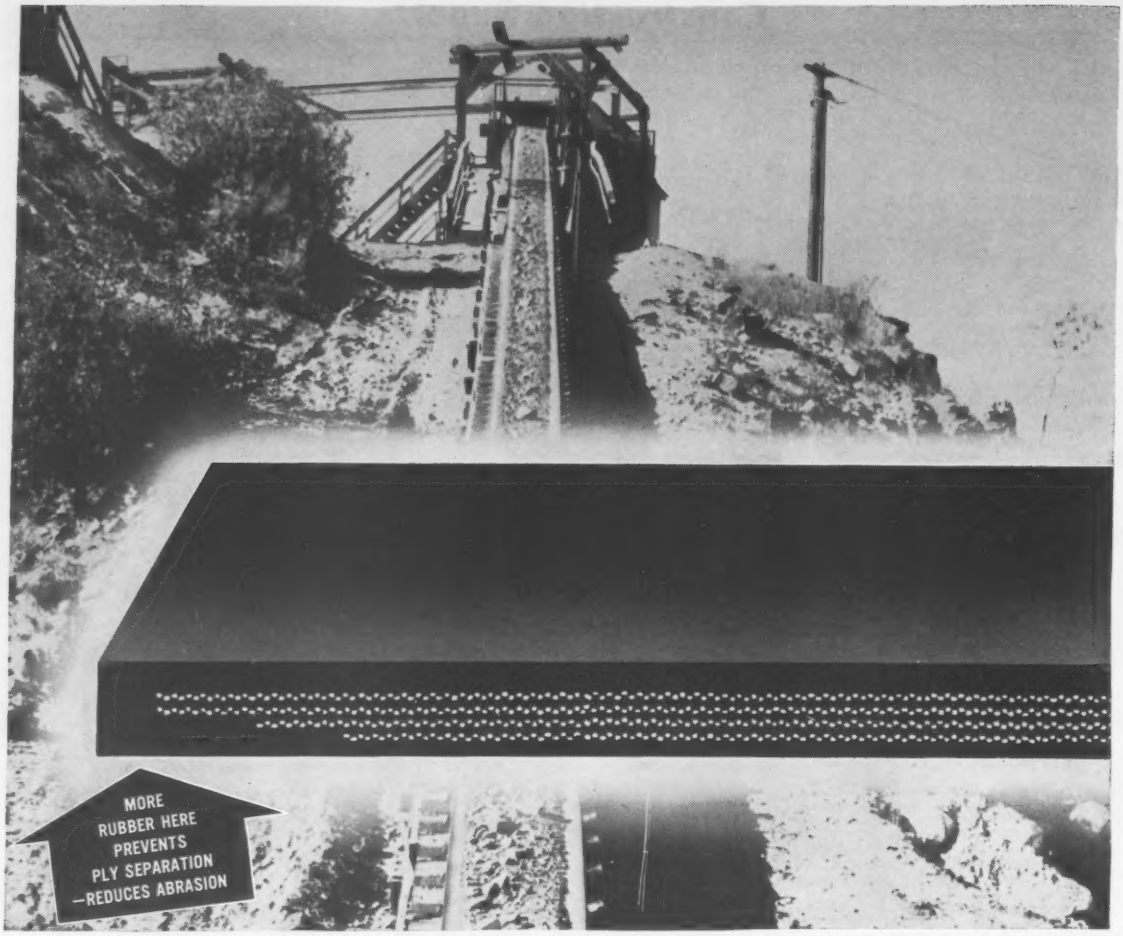
▲ **E. H. Marhoefer, Jr.,** 2424 N. 25th Ave., Franklin Park, Ill., CA **$2,000,000,** HOTEL alterations, air-conditioning, plumbing, heating, CHICAGO, ILL. Albert Pick Hotels, 20 N. Wacker Dr., Chicago 6, Ill. Bids Mar. 11, awarded Apr. 8. CD 3/9.

▲ **H. K. Ferguson Co.,** 1783 E. 11th St., Cleveland, O., CA, 1 story, 440 x 1,100 ft., 515,000 sq. ft., steel, cement ENGINE PLANT adjacent to Plant 2, at Harvey Works, HARVEY, ILL. Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee, Wis. CD 2/24.

▲ **M. A. Lombard & Sons Co.,** 1215 W. 103rd St., Chicago, Ill., CA **$1,032,096,** 3 story, 49,000 sq. ft. COLLEGE RESIDENCE HALL, RIVER FOREST, ILL. Rosary College, 7900 Division St., River Forest, Ill. Bids Mar. 15, awarded Apr. 8. CD 4/8, under LB.

▲ **Kroening Eng. Co.,** 4500 W. Mitchell St., Milwaukee, Wis., CA Est. **$10,000,000,** general contract Cardinal Stritch COLLEGE, GLENDALE, WIS. Sisters of St. Francis of Assisi, 3195 S. Superior Ave., Milwaukee, Wis. Bids Mar. 8. CD 3/1.

(Continued on page 76)



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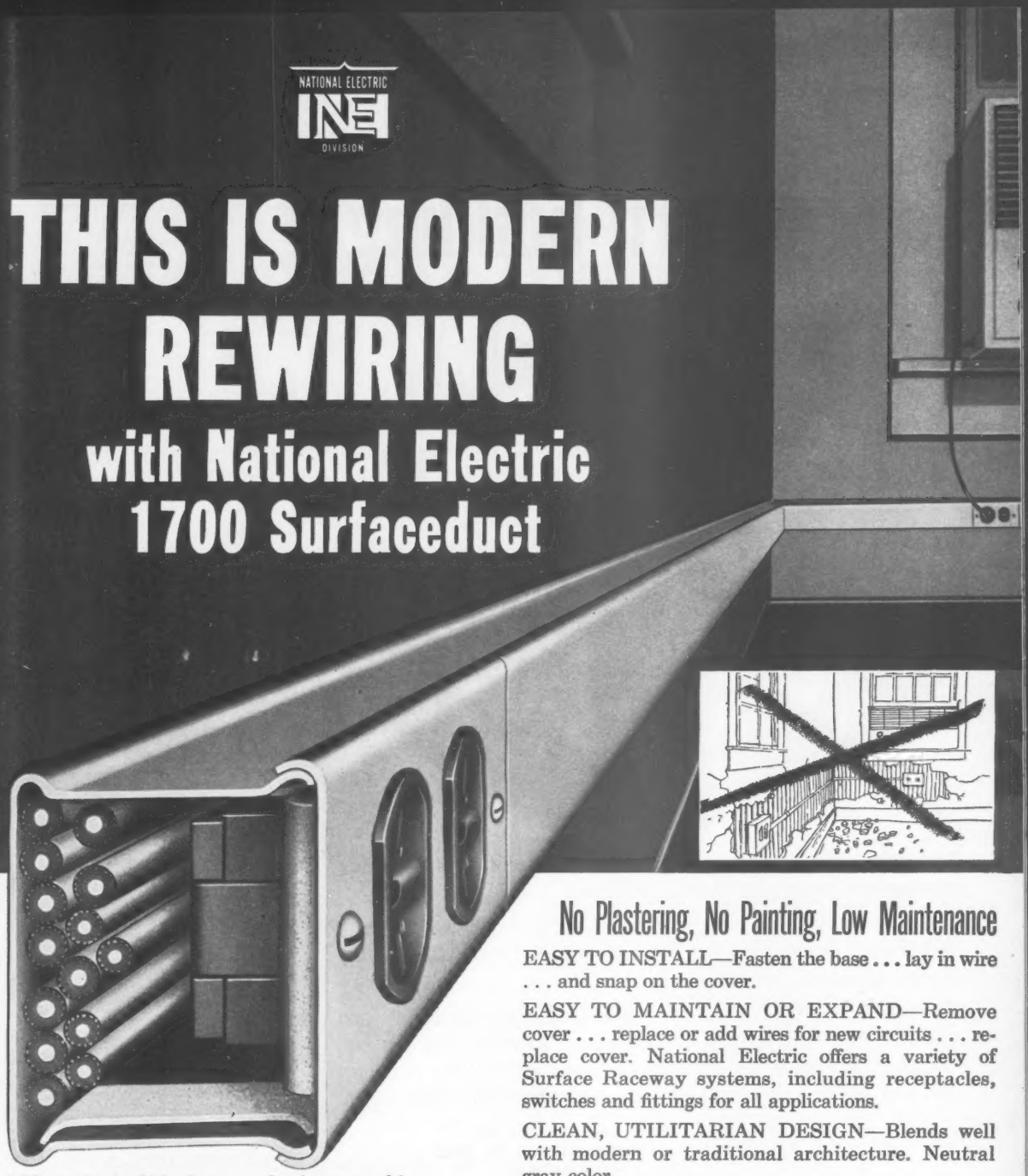

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(Continued from page 73)

BUILDINGS—BA

▲ **Mo., Knob Noster**—HOUSING—BA 5/11—Base Procurement Office, Whiteman Air Force Base, Knob Noster, Mo., armed services housing project, incl. 296 bldgs. with 504 units, Whiteman Air Force Base, Inv. No. 23-606-60-35. $9,000,000. Plans deposit $150. Williamson, Loebsack & Assocs., P.O. Box 1219, Topeka, Kan., archts. CD 3/30.

▲ **Mo., Moberly** — MEDIUM SECURITY PRISON — BA 5/26—Missouri Bd. P. Bldgs., 100 State Capitol, Jefferson City, medium security prison, incl. twin 2 story dormitories, chapel, auditorium and recreation center, vocational and industrial shops, power house, etc. Over $8,500,000. Marcel Boulicault, 411 N. 7th St., St. Louis, Zone 1, archt. Curbin & Davis, 2475 Canal St., New Orleans, La., assoc. archts. CD 1/21, under LB.

BUILDINGS—SLC

▲ **Mo., Lee's Summit**—PLANT—Western Electric, 195 Broadway, New York, N. Y., soon lets contract Western Electric Plant, site clearing, grading, constr. substructure for Bldgs. Nos. 20, 30, 40, 41 and 50, to incl. roads, 4,202 car parking, underground railroad facilities. Over $2,000,000. United Engineering & Constructors, Inc., 1401 Arch, Phila., Pa., engr. CD 12/30/57, under Mo., Kansas City.

▲ **Tex., Odessa**—BANK, etc.—First National Bank, c/o Geo. L. Dahl, archt.-engr., 2101 N. St. Paul St., Dallas, soon lets contract bank and office, 60,000 sq. ft. bank, 86,000 sq. ft. tower offices, total 8 story, bsmnt. $3,000,000. CD 12/9.

HEAVY CONSTRUCTION—LB & CA

▲† **Graver Tank & Mfg. Co., Division Union Tank Car Co. and Western-Knapp Engineering Co., Division Western Machinery Co.**, 4809 Todd Ave., East Chicago, Ind., LB **$8,094,200**, est. $10,227,314, (6 bidders), construct 7 horizontal steel penstocks and 14 steel surge tanks for Oahe Dam, Pierre, CIVENG-25-066-60-65, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Apr. 14. CD 2/23.

▲ **Atoka Water Contractors, Inc.**, Republic Building, Oklahoma City 2, Okla., CA **$53,448,594**, est. $55,000,000, 98.9 mi. 48 in. pipe line, six pumping stations, terminal reservoir at Oklahoma City to bring water from Lake Atoka, OKLAHOMA CITY, OKLA. Oklahoma City Development Trust, First National Bldg., Oklahoma City, Okla. C. E. Bretz, 1916 N. Broadway, engr. CD 12/19/55.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas, Denver, Bids opened 4/15,
Colo.—**Gradner Constr.**, Glenwood Springs, Colo., LB **$2,091,301**, (7 bidders), concrete pavement, plant mixed b. surf., Lafayette Junction, Proj. 1-25-3(13) 229, Weld and Adams Counties;
Colo.—**Pioneer Constr.**, 29 Lane and Highway 96, Pueblo, Colo., LB **$428,699**, (4 bidders), Granada and Holly, Proj. F001-5 (13), Prowers Co. CD 4/5.

BUILDINGS—LB & CA

▲ **J. E. Dunn Constr., Co.**, 929 Holmes, Kansas City, Mo., CA **$1,097,966**, est. $1,165,000 two DORMITORIES: 5 story T-shaped 65,892 sq. ft. part air conditioned Men's DORMITORY and 4 story 17,074 sq. ft. Women's addn. to TODD HALL, WARRENSBURG, MO. Central Missouri State College, Warrensburg, Mo. Bids Mar. 25, CD 4/15, under LB.

▲ **T. D. Howe Constr. Co.**, P. O. Box 19027, Houston, Tex., CA **$1,118,000**, SHOPPING CENTER UNIT, HOUSTON, TEX. The Meyerland Co., 4703 Jason St., Houston, Tex. McCleary & McCormick, 3270 Sul Ross St., Houston, Tex., archts. CD 3/15, under LB.

▲ **C. H. Carder Constr. Co.**, 225 Sierra Dr. S. E., Santa Fe, N. M., Owner Builds, **$1,000,000**, 100, frame-stucco HOMES, SANTA FE, N. M.

FAR WEST

BUILDINGS—SLC

▲ **Calif., San Leandro**—HOSPITAL—East Bay Lutheran Hospital Assn., 1332 E. 14th St., soon lets contract 4 story, 100 bed, 62,000 sq. ft. rein.-con. San Leandro Memorial Hospital, MacArthur Blvd. and Benedict Dr. Over $2,000,000. Stone, Marraccini & Patterson, 536 Mission St., San Francisco, archts. Bids Apr. 22 rejected, LB **$2,125,000**. CD 4/8, under LB.

HEAVY CONSTRUCTION—LB & CA

▲† **Lewis Hopkins Co.**, 221 South Third St., Pasco, Wash., CA **$1,213,629** (7 bidders), earthwork, concrete lining, and structures for Block 80 laterals and wasteways, West canal laterals, Columbia Basin Proj., Spec. DC 5279, Othello, Grant Co., WASHINGTON. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Mar. 15, awarded Apr. 12. CD 3/22, under LB.

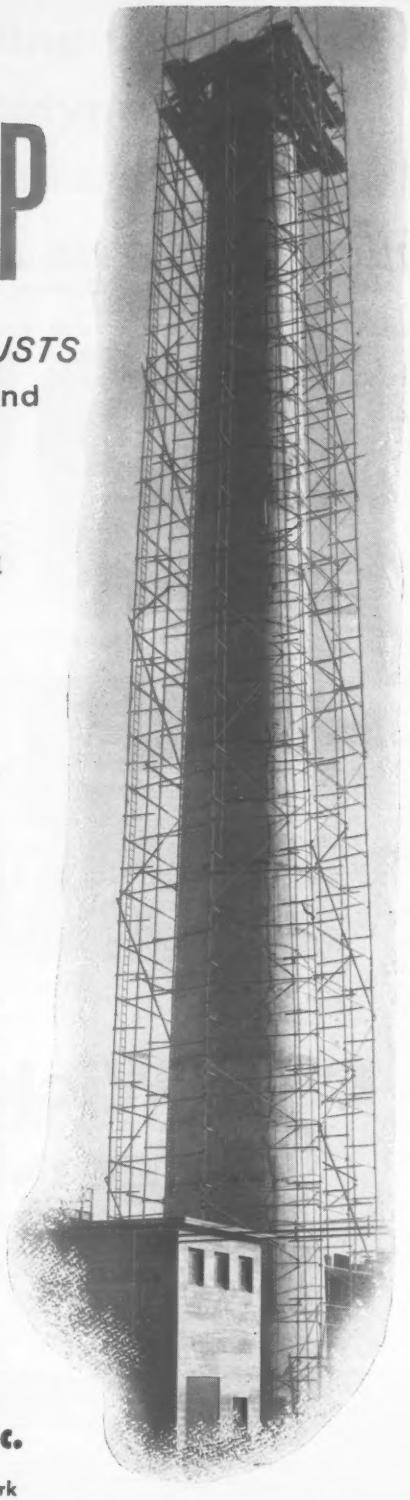
▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 4/14,
Vinnell Corp., Vinnell Constructors, A. F. Vinnell, 1078 North Mission Rd., Los Angeles, Calif., LB **$9,693,235** (7 bidders), 1 mi. eight lane freeway on Golden State Freeway, US 6-99 between 0.6 mi. south of Pasadena Ave. and 0.2 mi. northeast of Arnold St., incl. constr. Golden State-Pasadena Freeway Interchange, VII-L.A.-4,161,205-LA, Los Angeles Co. CD 2/17.

▲ **Weitz Co., Inc.**, 406 Fleming Bldg., Des Moines, Iowa, CA **$2,580,333**, bulk grain terminal, Pier A, Berth 211, Long Beach Outer Harbor, LONG BEACH, CALIF. Long Beach Harbor Dpt., 1333 Embarcadero,

(Continued on page 80)

one foot or 500' UP

SAFETY and EFFICIENCY are MUSTS
when your men work off-the-ground



Maybe you're proud of your safety record. *Maybe you're not.* In any event, you can get more down-right safety . . . *and efficiency* . . . by using off-the-ground working equipment designed, engineered and manufactured by a company which has been dedicated to off-the-ground safety for 50 years . . . a company which knows from experience *what* to do, *and how*, to provide the features that can keep your safety record clean.

And, what's more, one who has *all* the variety and styles of equipment needed for every kind of construction scaffold or shoring job, or for maintenance work . . . whether you need working platforms a foot or 500 feet, or more, off-the-ground.

PS CO. Has Everything You Need
To Make **Your** Off-the-ground
Working Conditions **Safe and Efficient**

SCAFFOLDING . . . "Trouble Saver" ®. Sectional and "Tube-Lox" ® tube and coupler Steel Scaffolding for working platforms to any size, shape or height. Rolling and stationery scaffolds in steel and aluminum for specific conditions.

HANGING SCAFFOLDS . . . "Gold Medal" ® Midget and Junior Scaffolds (hanging) for light-duty work. "Gold Medal" Safety Scaffolds for large, heavy jobs.

PLUS, locally available engineering service and unbiased help in selecting the **right** equipment for **your** particular needs with the greatest safety, efficiency **and economy!**

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THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Dept. ENR, Long Island City 1, New York
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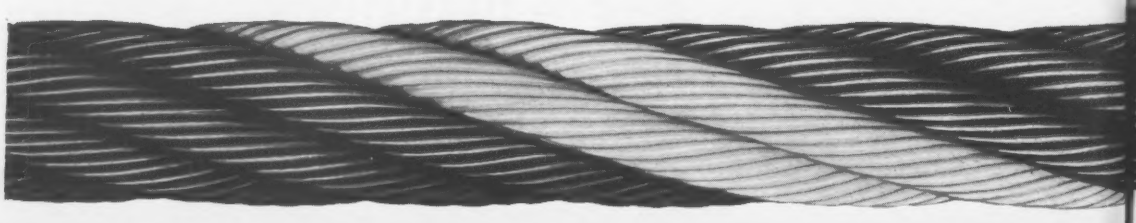
Interim Progress Report on ...

DOUBLE GRAY-X®

CF&I-Wickwire's new longer-lasting wire rope



Falcon Seaboard Drilling Company field tests a prototype of Double Gray-X – now orders carload

The first company to use a prototype of Double Gray-X was the Falcon Seaboard Drilling Company of Tulsa. Aware that modern drilling practices demand the best possible equipment, Falcon Seaboard tested Double Gray-X on some of their rotary drilling rigs, an operation that subjects ropes to extreme abuse. Mr. Jack Starr, Vice President in Charge of Drilling, commented, "The results obtained from original tests with Double Gray-X prototype led to our decision to order *a carload of this improved product.* Falcon Seaboard insists on the best products, in order to serve the oil industry in accordance with today's modern standards."

The Secret of Longer Rope Life

CF&I-Wickwire engineers, after intensive research, discovered that by using an entirely new wire drawing technique—including the use of Molysulfide* in the lubricant—the characteristics of the wire rope were greatly improved. This method creates a permanent molecular jacket around the individual wires that provides these benefits:

- **reduced friction between the individual wires in each strand of Double Gray-X during service**
- **minimized surface imperfections in the wires of Double Gray-X**
- **wires have greater resistance to abrasion, crushing and bending**

If you are a user of wire rope, you can *increase* the safety of your operation and *reduce* equipment downtime with Double Gray-X. Made in a wide variety of sizes and constructions, Double Gray-X is recommended for all types of equipment. For complete details on this new wire rope, call the nearest CF&I sales office or see your local distributor.

Greater Strength

The molecular shield around this new premium wire rope gives Double Gray-X longer life. In addition, you get the *extra strength* for which Double Gray has always been famous. Made of extra improved plow steel with an Independent Wire Rope Core of the same material, this rope gives 15% higher breaking strength than the catalog breaking strength of an improved plow steel rope with IWRC.

*Registered Trademark of Climax Molybdenum Co.

7623

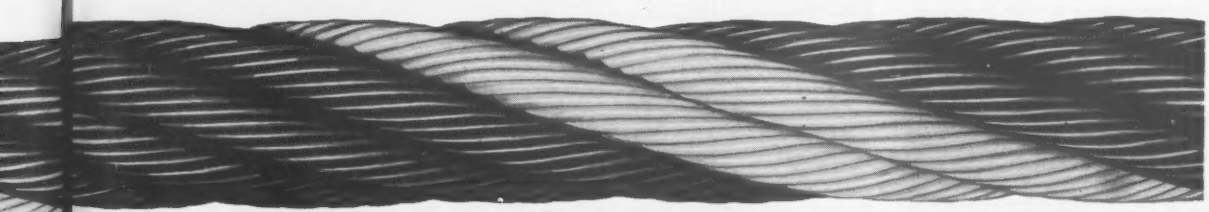
CF&I STEEL

WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION

In the West: **THE COLORADO FUEL AND IRON CORPORATION** — Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa (Tex.) Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Tulsa • Wichita

In the East: **WICKWIRE SPENCER STEEL DIVISION** — Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) New Orleans • New York • Philadelphia



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MORSE-STARRETT
WIRE ROPE
CUTTER

Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
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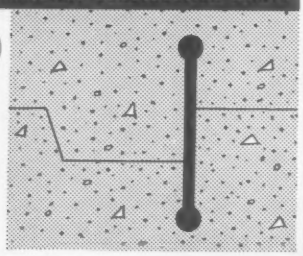
WATERSTOPS
FOR MASONRY CONSTRUCTION JOINTS



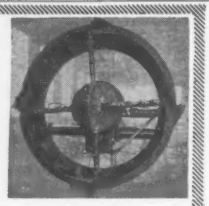
RUBBER or VINYL

Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not crack or tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Vinyl or Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

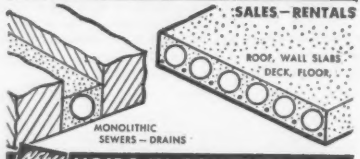
WILLIAMS
EQUIPMENT and SUPPLY CO.
456 W. Eight Mile Rd., Hazel Park, Mich.

TUNNEL EXCAVATORS
CUT UP TO 45 LINEAL FEET OF TUNNEL IN 8 HOURS!



Consistently excavate 30 Lineal feet of 10' 6" Dia. tunnel in 8 hours in Chicago sewers. Designed for clay, earth and shale.

MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.



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REUSABLE RUBBER VOID FORMS FOR SEWERS, SLABS, DRAINS & DUCTS. SUPERSEDES ALL VOID FORMING TECHNIQUES.

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(Continued from page 76)

P.O. Box 570, Long Beach, Calif. Bids Apr. 6. CD 4/11, under LB.

▲ **Cherf-Sandkay & Cheney Co.**, P.O. Box 938, Ephrata, Wash., LB $1,780,569 (8 bidders), Nicasio Dam and Reservoir, near Novato, SAN RAFAEL, CALIF. Marin Municipal Water Dist., 874 4th St., San Rafael, Calif. Bids Apr. 13. CD 3/21.

▲ **Williams & Burrows, Contractors, Inc.**, 500 Harbor Blvd., Belmont, Calif., CA $1,576,776 (13 bidders), Newell Dam, SANTA CRUZ, CALIF. City, City Hall, Santa Cruz, Calif. Creegan & D'Angelo, 1046 W. Taylor St., San Jose, Calif., engrs. Bids Mar. 1. CD 11/25/58.

▲ **A. C. Chock Ltd.**, 822 Mapunapuna St., Honolulu, Hawaii, CA $1,140,000, grading, sidewalks, gutters, etc. for $5,000,000 Niu Valley Subdivision, HONOLULU, HAWAII. George Hasegawa, Alexander Young Bldg., Honolulu, Hawaii. CD 10/2/59, under Commercial Buildings.

BUILDINGS—LB & CA

▲ **Callan Constr. Co.**, 2790 Junipero Serra Blvd., Colma, Calif., CA $250,000,000, Callan Park SUBDIVISION, near DALY CITY, CALIF. Caesar-Callan Homes, Inc., 2790 Junipero Serra Blvd., Colma, Calif. Edward Fickett, 7421 Beverly Blvd., Los Angeles, Calif., archt.

▲† **Del E. Webb Constr. Co.**, 2727 North Central Ave., Phoenix, Ariz., LB $6,557,346, 400 units Capehart-Rains HOUSING, Vandenberg Air Force Base (No. 3), LOMPOC, CALIF. Procurement Office, Vandenberg Air Force Base, Lompoc, Calif. Bids Apr. 7. CD 3/31.

▲ **Foothill Junior College Dist. of Santa Clara Co.**, 150 El Camino Real, Mt. View, Calif., rejected bids Mar. 29, Foothill COLLEGE, El Monte Rd. and Purissima Ave., LOS ALTOS, CALIF. Ernest J. Kump & Masten Hurd & Gwathmey, 526 Powell St., San Francisco, Calif., archts. LB $8,791,000. Will re-advertise. CD 4/8, under LB.

▲ **Pacific Coast Builders**, 1 South Park, San Francisco, Calif., LB $1,424,000 (9 bidders), 4 story, 85,000 sq. ft., rein.-con., steel frame COUNTY OFFICE, Palo Alto, SAN JOSE, CALIF. Bd. Supervs. Santa Clara Co., 20 W. Rosa St., San Jose, Calif. Bids Apr. 14. CD 3/14.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Sault Ste. Marie**—BA 5/6—Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, integrated sewerage scheme, incl. Contract C, sewage pumping station, Pim St., Contract D, sewage pumping station at Clark St., primary sewage treatment plant and outfall sewer, pumping station incl. rein.-con. substructures, structural steel and masonry superstructures. $1,600,000. Proctor & Redfern, 75 Eglinton Ave. E., Toronto, engrs. CD 10/3/58.

▲ **Ont., Sudbury**—BA 5/10—City, 83 Cedar St., underpass, incl. concrete piers, abutments, retaining walls, structural steel, concrete superstructure; 350 ft. rein.-con. pedestrian underpass under railway tracks from Riverside Dr. to Elgin St. $1,600,000. Plans deposit $50. M. M. Dillon & Co., Ltd., 141 Maple St., London, engrs. CD 7/13.

HEAVY CONSTRUCTION—LB & CA

▲ **QUEBEC**—Provincial Dpt. Rd., Parliament Bldgs., Quebec City,
Simard & Freres Cie Ltee, 3rd Ave. E., Amos, Que., CA Est. $2,500,000, 65 mi. permanent road from point 35 mi. north of Amos to Mattagami Mines site.

BUILDINGS—LB & CA

▲ **Doran Constr. Co. Ltd.**, 5 Concord St., Ottawa, Ont. CA Est. $2,500,000, RESEARCH and DEVELOPMENT LABORATORIES, Hy. 17 and Nesbitt Rd., OTTAWA, ONT. Northern Electric Co. Ltd., 1600 Dorchester St. W., Montreal, Que. Bids Mar. 9, awarded Apr. 12. CD 2/26.

▲ **Droge Constr. Co. Ltd.**, 1739 Lakeshore Rd. E., Clarkson, Ont., CA Est. $1,000,000 (13 bidders), 1 story, 40,000 sq. ft. masonry, steel BOTTLING PLANT, air-conditioning, Sunrise Ave., TORONTO, ONT. Royal Crown Cola Ltd., 560 Bayview Ave., Toronto, Ont. Bids Apr. 4, awarded Apr. 8. CD 4/1.

▲ **Pigott Constr. Co. Ltd.**, 1250 Bay St., Toronto, Ont., CA Est. $1,250,000, 7-level ramp type PARKING GARAGE, Richmond St. W., TORONTO, ONT. The Robert Simpson Co. Ltd., 176 Yonge St., Toronto, Ont. Bids Mar. 24, awarded Apr. 11. CD 3/18.

▲ **Eastern Constr. Co. Ltd.**, Box 96, Walkerville, Ont., CA Est. $1,000,000, 3 story, 158x368 ft. U-shaped brick, block SCIENCE, poured concrete fdn., WINDSOR, ONT. Assumption University, 400 Huron Line Rd., Windsor, Ont. Bids Feb. 16, awarded Apr. 8. CD 1/5.

▲ **Pentagon Constr. Co. Ltd.**, 5005 Namur St., Montreal, Que. CA Est. $2,000,000, two 45x132 ft. and 45x430 ft. SMELTER PLANT EXTENSIONS, ARVIDA, QUE. Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, Que. Bids Apr. 11, awarded Apr. 12. CD 4/5.

▲ **B. D. Constr. Engineering**, 308 Fraser St., Ste. Anne de la Pocatiere, CA Est. $1,500,000, HOSPITAL EXTENSION, STE. ANNE DE LA POCATIERE, QUE. Corp de l'Hospital de la Pocatiere, Ste. Anne de la Pocatiere, Que. Pierre Rinfret, 1134 St. Louis Rd., Quebec City, Que., archt. Louis P. Couture, Ave. du Parc, Pont de Quebec, Que., engr. CD 4/12.

FOREIGN

BUILDINGS—BA

▲ **Turkey, Yozgat** — BREWERY — BA 6/15 — Inhisarlar Umm Mudurlugu Satin Alma, Komisyonu Reisligi, Tepebasi, Istanbul, brewery. Over $3,600,000. Plans deposit $5.55.

(Continued on page 82)

DRILLING ★ INDUSTRIAL ★ AIRCRAFT ★ MINING ★ LOGGING ★ CONSTRUCTION ★ MARINE ★ ELEVATOR ★

MACWHYTE WIRE ROPE

MADE IN U.S.A.

THERE'S A REASON WHY IN WHYTE STRAND SHOVEL ROPES!

For your construction operation, there are many reasons why Whyte Strand is the best wire rope you can use on your shovels. Here are just a few:

- Every foot of wire in Whyte Strand is specially drawn by Macwhyte in their own wire mill.
- Product engineers determine the exact makeup of each rope to assure correct size, strength, and flexibility to meet your requirements.
- Special Macwhyte lubricants are used in accordance with the needs of the equipment or the type of service in which the rope will be used.
- Entire wire and rope mill operations are concentrated on the making of one product . . . *wire rope!*

But the proof of the pudding is in the using — and here's where Whyte Strand shines. You can spend all kinds of money, but you can't buy a better rope for your shovels than Whyte Strand . . . nor one that will give better service, with less trouble.

Whyte Strand shovel ropes are made in two strengths — Monarch Whyte Strand Improved Plow Steel and PREmium Whyte Strand Extra Improved Plow Steel — both are listed in bulletin No. 6025.

Ask for this new bulletin which gives complete listings of all Whyte Strand wire rope.

213-A

MACWHYTE Wire Rope COMPANY

2900 Fourteenth Avenue, Kenosha, Wisconsin, U. S. A.

Wire Rope • Slings • Cable Assemblies

(Continued from page 80)

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ind., Frankfort**—City, City Hall, WW expansion incl. replacing 12 mi. water mains, 2 storage tanks, filter sys., 2 wells, southwest part of twp. $2,460,000. J. B. Wilson, K of P Bldg., Indianapolis, consult. engr.

SEWERS, WASTE DISPOSAL

▲ **Mo., Ballwin**—City, City Hall, $2,150,000 bond election May 17, sewer lines incl. $393,550 to purchase existing Ballwin Sewage System privately owned. $1,509,000. Election date extended. CD 3/14.

▲ **Mo., Raytown**—City, City Hall, voted bonds Apr. 5, sewerage sys. extension. $2,178,000. B. L. Oliver & Co., 1805 Grand, Kansas City, Mo., engrs. CD 3/16.

▲ **N. C., Albemarle**—City, City Hall, voted bonds Mar. 29, sewage treatment plant, $2,250,000. Pierson & Whitman, 1618 Glenwood Ave., Raleigh, consult. engrs. CD 3/1.

▲ **O., Barberton**—City, City Hall, sewage treatment plant, $1,333,207; enlarging Snyder Ave. pumping installation, $200,286, Burgess & Niple, 2015 W. 5th St., Columbus, O., consult. engrs., installing 30 in. sewer force main, $204,670. CD 3/25.

BRIDGES

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre,
Hughes Co.—Missouri River Bridge between Pierre and Fort Pierre, $1,500,000. Kenneth Scurr, chief bridge engr.

▲ **Que., Montreal**—City, City Hall, grade separation, Sherbrooke St. E. at Pie IX Blvd. $1,500,000. Beaulieu Trudeau & Assocs., 6650 Darlington Ave., consult. engr. CD 10/9.

▲ **Que., Montreal**—City, City Hall, grade separation, intersection Saint-Remi and Saint Jacques Sts., $1,300,000; grade separation, intersection Jean Talon St. W. at Cote Des Neiges Rd., $800,000. CD 4/12.

STREETS AND ROADS

▲ **HAWAII**—State Planning Office, Finance Factors Bldg., Honolulu,
Kauai Co. (Island of Kauai)—grading, added excav., drainage, guard rails, 3 bridges 4 mi. Kauai Belt Hy., Kalihiwai to Hanalei, $1,018,000.
relocation Poipee Beach Rd., Stage 1, bldg. 1.4 mi. 2-lane highway from Koloa-Paipee Rd. to area adjacent to Kaneolooma Heiau, $251,000.
constr. 2 sections 2-lane highway extending first stage constr. in both east and west direction, Poipu Beach Rd., Stage II, $342,000.
grading, drainage, 8 bridges and pavement 12.1 mi. Kauai Belt Highway, Paipee to Kalihiwai, $3,379,000.
20 ft. pavement, grading, drainage, landscaping 1.5 mi. entrance road, Port Allen Resort Area, $216,000.
constr. 5.7 mi. Kukuioniono Scenic Dr. from Kukuiula to Kalaheo, $540,000.
constr. 2 sections Wailua Falls loop Rd. leading from Wailua Homesteads to falls with offshoot, $562,000.
grading, drainage, guard rails, landscaping 5.5 mi. New Rd. to Kokee, Waimea to Kokee, $777,000.
grading, drainage, landscaping 17,000 lin. ft. 2-lane highway and 8,500 lin. ft. 4-lane parkway, new approach roads to Poipu, $1,075,000.
pavement, structures, grading and drainage 18 mi. 16 ft., 2-lane highway, Forest Rd. along power line from Kilohana Crater to Pookau, $2,544,000. Belt Collins & Assoc., and Harland Bartholomew & Assoc., Hawaiian Life Bldg., Honolulu, consult. engrs. CD 8/28.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Herkimer Co.—reconstr. 7.8 mi. Rte. 28 FAI Project, $1,600,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Lewis Co.—reconstr. 7¾ mi. Rte. 12 FAI Project, $1,500,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Oneida Co.—reconstr. 6 mi. Rte. 69 between Camden and Rome, FAI Project, $1,200,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Rockland Co.—constr. 5 mi. Rtes. 59 and 45 on new location in vicinity of Spring Valley. FAI Project, $1,500,000.

EARTHWORK, WATERWAYS

▲ **California**—Browns Valley Irrigation Dist., Marysville, earth and rockfill dam on French Dry Creek to incl. reservoir, tunnel, 14 mi. canal, rehabilitate 47 mi. canal, pumping plant, Yuba Co. $4,901,000. Woodward-Clyde-Sherard & Assoc., 1150 28th St., Oakland, consult. engrs.

▲ **Ill., Chicago**—Chicago Regional Port Dist., 360 N. Michigan Ave., Zone 1, 3,500 ft. wharf and cargo sheds for 10 shops, $24,000,000. Constr. in Summer; tank farm, east side Lake Calumet Harbor, $15,000,000. First Phase in 1960; steel handling dock, Lake Calumet Harbor, $3,000,000. Constr. Summer 1960. CD 1/26/54.

▲† **Michigan and Ontario**—U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich., dredging Brush Point Turn, St. Mary's River, CIVENG-20-064-60-65. Under $2,000,000. Plans deposit $1.

▲ **Texas**—Canadian River Municipal Water Supply Auth., 1114 10th St., Lubbock, Canadian River dam and reservoir, with pipeline to nine cities, $74,800,000. Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York, N. Y., consult. engrs. Constr. 1961. CD 11/11/55.

AIRPORTS

▲ **Fla., Miami**—HANGAR, etc.—Eastern Air Lines, 10 Rockefeller Plaza, New York, N. Y., 3 story hangar, office, shops and warehouse, 200,000 sq. ft. engineer overhaul shop, Miami International Airport. $12,000,000. Albert Kahn Associated Engineers & Architects, Inc., 345 New Center Bldg., Detroit, Mich., consult. engr. To go ahead in Fall.

▲† **Fla., Orlando**—ALERT HANGAR, etc.—U. S. Eng., 575 Riverside Ave., Jacksonville, alert hangar, aircraft weapons shelter, ammunition storage, launch missile facilities, McCoy Air Force Base. $1,680,000 (funds released). CD 9/24/58.

▲ **Mich., Grand Rapids** — AIRPORT IMPRVS. — Kent County Bd. Aeronautics, 3206 S. Madison St., plans by J. & G. Daverman Co., 925 Grandville St. S.W., Grand Rapids, Mich., site preparation, paving, East-West runway, taxiway, apron, Cascades Central Airport. $2,000,000. Williams & Work, 238 Ottawa N.W., Grand Rapids, Mich., engrs. CD 11/24.

LATIN AMERICA

▲ **Panama, Panama City**—Water & Sewage Comn. of Panama, Panama City, sewerage pipe line and pumping station, $1,300,000. Greeley & Hansen Engineering Co., 14 E. Jackson St., Chicago, Ill., U.S.A., engrs. CD 9/30/49.

AMERICANS ABROAD

▲† **Turkey**—TECHNICAL FACILITY—U.S. Eng., Mediterranean Div., Leghorn, Italy, APO 19, New York, N. Y., U.S.A., technical facility near Izmir, $4,000,000.

▲ **West-Germany**—HOSPITAL, etc.—Benjamin Franklin Foundation, Berlin, preliminary studies being made by Curtis & Davis, 2475 Canal St., New Orleans, La., U.S.A., hospital, university clinics and research laboratories. $32,000,000. Fa. Franz Mocken, Dusseldorferstr. 38, Berlin, West-Germany, engr.

PUBLIC BUILDINGS

▲ **Calif., Auburn**—COURTHOUSE, etc.—Placer County Court House, plans by Harold M. Hansen, 251 Post

(Continued on page 84)

When you face your jobsite with a shovel in one hand and a life preserver in the other, it's time to call STANG. We'll dewater your excavation quickly, efficiently and economically.

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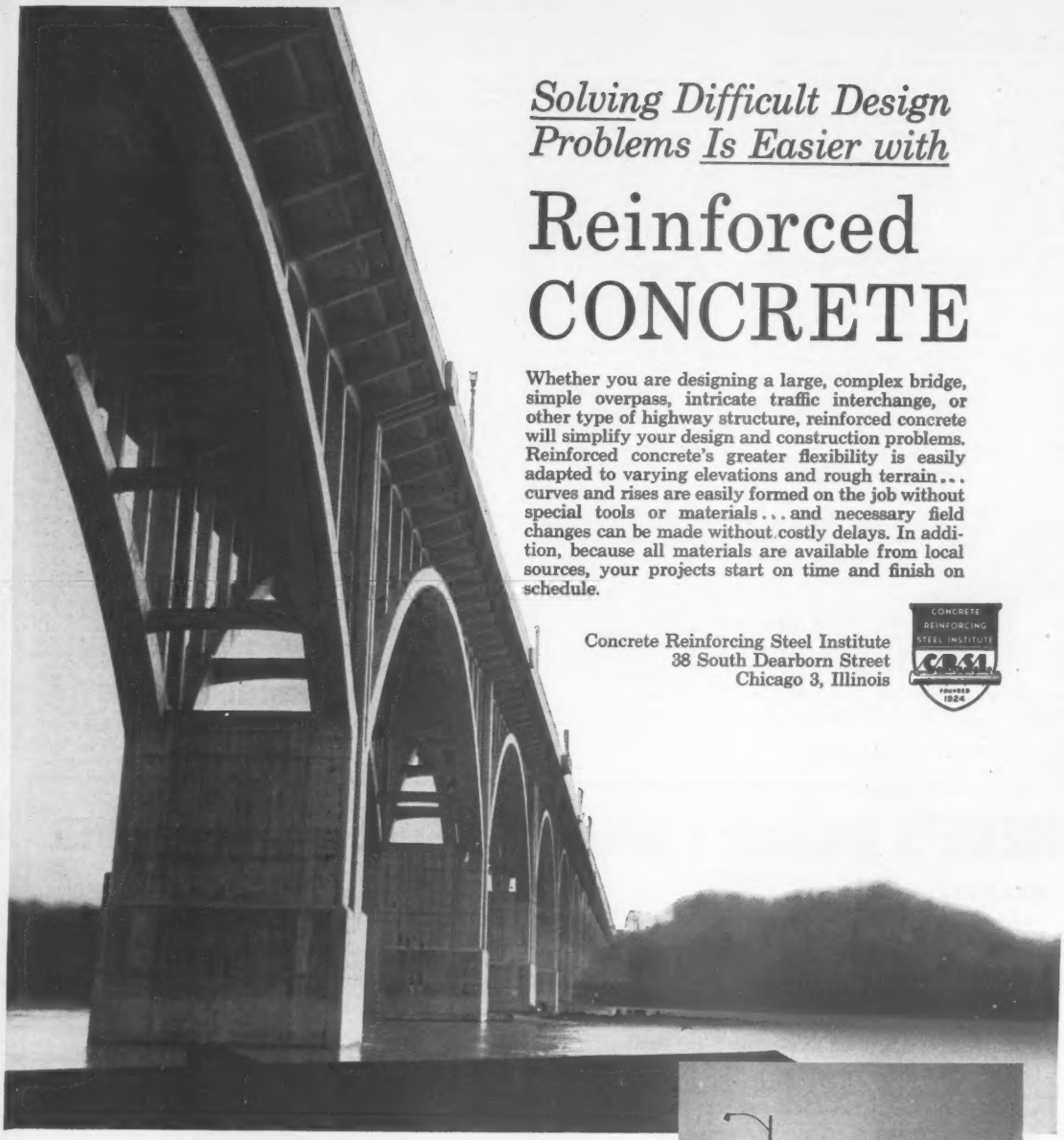

Robert E. Lee Bridge, Richmond, Virginia

Overpass along Edens Expressway, Chicago, Illinois

Sunset Boulevard Interchange, Los Angeles, California

Ute Pass Bridge, west of Colorado Springs, Colorado

(Continued from page 82)

St., San Francisco, courthouse and administration center. $4,000,000-$5,000,000.

▲ **Calif., San Jose**—WELFARE—Bd. Supervs., Santa Clara Co., 2061 Rosa St., plans by Higgins & Root, 220 Meriden Rd., 4 story welfare bldg. $2,000,000. Bids in Fall. CD 3/16/59.

▲ **Conn., Ansonia**—SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, Naugatuck Valley Vocational Technical School. $2,710,250.

▲ **Fla., Jacksonville**—AUDITORIUM—City, City Hall, plans by Kemp, Bunch & Jackson, 33 South Hogan St., Zone 2, auditorium. $4,500,000. CD 4/7.

▲ **Fla., Punta Gorda**—SCHOOL—Charlotte Co., $1,825,000 bond election May 22, school. Bolten McBryde, Fort Myers, archt. CD 12/11.

▲ **Ill., East St. Louis**—SCHOOLS—East St. Louis School Dist., Bd. Educ., 240 N. 6th St., defeated $6,700,000 bonds Apr. 9, schools and school addns. CD 3/21.

▲ **Ill., Evanston**—SCHOOL—Bd. Educ., 1323 Hinman Ave., voted bonds Apr. 9, College Hill Section School. $1,300,000. CD 3/15.

▲ **Ind., Logansport**—SCHOOLS—Logansport Community School Corp., Junior High and grade school, near football stadium, Junior High School addn. to Columbia Grade School. $1,300,000. CD 5/28/52.

▲ **Kan., McPherson**—HIGH SCHOOL—Bd. Educ., 301 W. Kansas St., $1,400,000 bond election May 3, high school, etc. $1,457,000. Shaver & Co., 205½ S. Santa Fe, Salina, archts. CD 3/14.

▲ **Mass., Brookline**—TOWN HALL—Town, Bd. Selectmen, Town Hall, plans by Anderson, Beckwith & Haible, 11 Beacon St., Boston, town hall, Washington St. $1,750,000. CD 5/9/56.

▲† **Mass., Chicopee Falls**—CAPEHART HOUSING—U.S. Eng., 424 Trapelo Rd., Waltham, plans by Pederson & Tilney, 155 Whitney Ave., New Haven, Conn., 180 units Capehart Housing for personnel Westover Air Force Base, $2,880,000. Congdon, Gurney & Towle, Inc., 53 State St., Boston, consult. engr. CD 4/6.

▲ **Minn., Brooklyn Center** — JUNIOR-SENIOR HIGH SCHOOL—Bd. Educ. Earle Brown Ind. School Dist. No. 286, voted $1,700,000 bonds Mar. 15, Junior-Senior High School. Constr. 1960. Matson & Wegleitner, 2323 Wayzata Blvd., Minneapolis, archts.

▲ **Minn., Duluth**—SCHOOL CONSTR.—Bd. Educ. Special School Dist. No. 3, defeated $7,500,000 bonds, school constr. etc. CD 3/25.

▲ **Minn., Red Wing**—SCHOOL—Bd. Educ., voted $1,500,000 bonds Apr. 5, schools. Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, archts. CD 4/1.

▲ **Minn., Spring Lake Park**—SCHOOL—Bd. Educ. School Dist. No. 16, voted $2,500,000 bonds Feb. 29, schools. CD 12/18/57.

▲ **Mo., Cape Girardeau**—SCHOOL—Bd. Educ. of Cape Girardeau, Junior High School near Thilenias and Carruthers Sts. $1,500,000. CD 6/17/58.

▲ **Mo., Independence** — POWER PLANT ADDN. — City, City Hall, voted $12,000,000 bonds Apr. 5, Blue Valley Power Plant addn. to incl. extension electric power distr. lines. CD 8/30/55.

▲ **Mo., St. Louis County**—SCHOOLS—Special Dist. of Educ. and Training for Handicapped Children, St. Louis County, 25 N. Meramec Ave., Clayton 5, voted Apr. 5, on 5.5c tax increase to support district for three school bldgs. $1,800,000. Kenneth E. Wischmeyer, 911 Locust St., St. Louis 1, Mo., archt. CD 3/16.

▲ **N. J., Trenton**—STATE LABOR—State Division Purchases & Supplies, State House, plans by Frank Grad & Sons, 1180 Raymond Blvd., Newark, State Labor Bldg., $9,862,000. Farkas & Barron, 5 Beekman St., New York, N. Y., consult. engrs. CD 1/13/59.

▲ **N. J., West New York**—HOUSING FOR AGED—Housing Auth., 5814 Park Ave., plans by Ricker & Axt, 6115 Hudson Ave., 100-unit housing for aged, Proj. No. NJ 30-6, $1,800,000.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 45-12 Crescent St., Long Island City, plans by Maurice Courland & Son, 2112 Broadway, Zone 23, Proj. E-77, modernization and conversion of Junior High School 83, East 109th St. between 2nd and 3rd Aves. $1,500,000. To go ahead in 1960.

▲ **N. Y., Schenectady**—HOUSING—Municipal Housing Auth., 402 Millard St., P. O. Box 932, plans by Randall F. Atkinson, 147 Baret St., 7 story, 102 unit. two elevators Apartment, incl community and recreation rooms. $1,330,000. CD 7/24.

▲ **O., Cincinnati**—CRIME DETECTION—City, City Hall, crime detection bldg. $2,541,000. CD 2/28/55.

▲ **O., Cincinnati**—GARAGES—City, City Hall, parking garage, Reading Rd. near Broadway, $2,800,000. Constr. 1963; parking garage, 12th and Central Parkway, $1,800,000. Constr. 1964; 6th deck to off-street parking garage, 6th St., $400,000. Constr. 1964. Arthur Bird, city engr.

▲ **O., Cincinnati**—HOSPITALS—City, City Hall, General Hospital addns., alterations, $17,500,000; General Hospital, $10,800,000, constr. 1962; out-patient pavilions renovations, General Hospital, $3,575,000, constr. 1963-64. CD 1/21.

▲ **O., Elyria**—HOSPITAL—Elyria Memorial Hospital, plans by Mellenbrook, Foley & Scott, 20 Beech St., Berea, 6 story hospital addn. $4,000,000. CD 4/12.

▲ **Pa., Haverford**—HOSPITAL—Dpt. P. Welfare, Health & Welfare Bldg., Harrisburg, mental health hospital bldg. Phase II $3,500,000, Phase III $3,000,000; for Haverford Mental Health Center. CD 3/8/54, under Pa., Foxcroft.

▲ **Pa., Warren**—MECHANICAL SHOPS, etc.—Dpt. P. Welfare, Health & Welfare Bldg., Harrisburg, mechanical shops and therapy facilities, $750,000; generating unit for power house $100,000; admission bldg. addn. $450,000; female geriatrics addn. $2,250,000; office addn. Main Bldg. Center, $600,000; Patient Activities Bldg., $1,000,000. Warren State Hospital.

▲ **Va., Williamsburg**—LIBRARY—State, Dpt. Educ., State Office Bldg., Richmond, library, College of William and Mary, $3,000,000.

▲ **Wash., Richland**—HIGH SCHOOL—School Dist. 400, 615 Snow St., plans by Cowan & Paddock, Larson Bldg., Yakima, high school. $3,000,000.

▲ **Wis., Menomonee Falls**—HIGH SCHOOL—Joint School Dist. No. 6, Rte. 2, P.O. Box 154, plans by Brust & Brust, 1212 W. Wisconsin Ave., Milwaukee, Zone 3, Hamilton High School. $2,500,000.

▲ **Ont., Guelph** — POLICE COLLEGE — Dpt. P. Wks., East Block, Parliament Bldgs., Toronto, police college, $2,000,000.

▲ **Ont., Ottawa**—UNION STATION—National Capital Comn., 291 Carling Ave., Ottawa, Canadian National Rys., C. H. Greensides, ch. engr., Rm. 436, Toronto, and Canadian Pacific Rys., C. A. Colpitts, ch. engr., Windsor Station, Montreal, Que., plans by John B. Parkin Assocs., 1500 Don Mills Rd., Union Station, Hurdmans Rd. at Hurdmans bridge, $10,000,000-$30,000,000. DeLeuw, Cather & Co. of Canada Ltd., 1491 Yonge St., Toronto, consult. engrs.

▲ **Ont., Toronto**—COLISEUM—Canadian National Exhibition, Exhibition Park, sketches by J. Sutherland, City Hall, revamping Canadian National Exhibition's Coliseum. $3,000,000.

▲ **Ont., Toronto**—HOME FOR AGED—Municipality of Metropolitan Toronto, 67 Adelaide St. E., plans by Mathers & Haldenby, 10 St. Mary St., Y-shaped, steel concrete, masonry Home for Aged, Lawrence Ave. and Brimley Rd. $1,980,000. C. C. Carruthers & Wallace, Consultants Ltd., 92 Yorkville Ave., consult. engrs.

▲ **Que., Sherbrooke**—HOSPITAL—Provincial Health Dpt., Parliament Bldgs., Quebec City, plans by Pierre Rinfret, 1134 St. Louis Rd., Sillery, mental hospital, Chemin de Stoke, $17,000,000. Albert Poulin, 1115 Prospect St., and Jean Paul Audet, 1100 Prospect St., assoc. archts. Cote, Lemieux, Carignan & Bourque, 144 Vimy St. N., consult. engrs. CD 3/17.

COMMERCIAL BUILDINGS

▲ **Calif., Palo Alto**—DEPARTMENT STORE—R. H.

(Continued on page 87)

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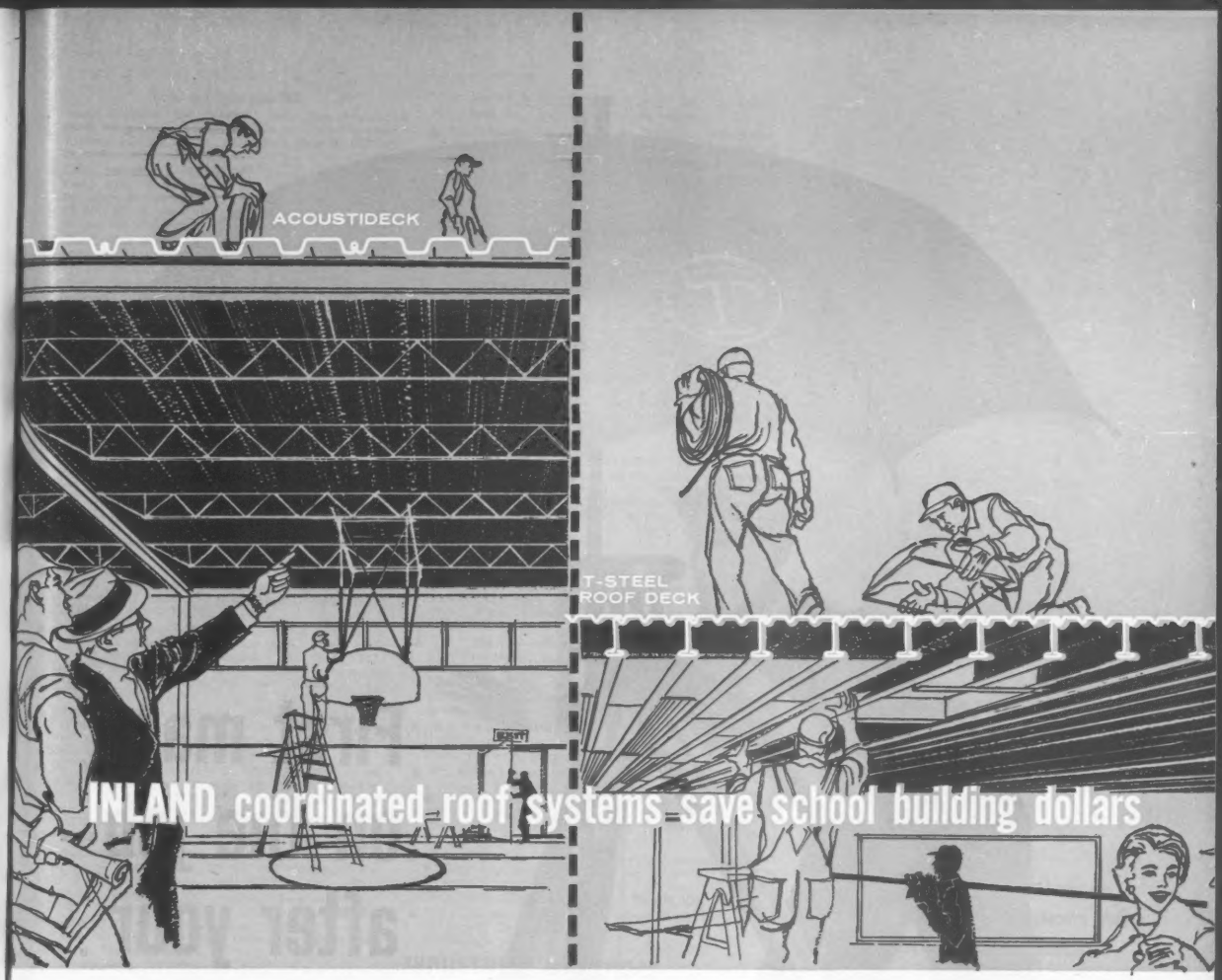

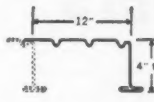

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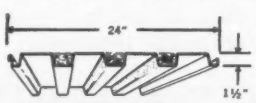
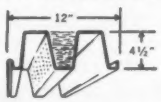


TYPE B ACOUSTIDECK—For purlin spacings to 10'. Uses minimum of 1" rigid insulation board.



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(Continued from page 84)

Macy, Stockton and O'Farrell Sts., San Francisco, plans by John S. Bolles, 14 Gold St., San Francisco, 2 story, 150,000 sq. ft. department store in Stanford Shopping Center. **$2,500,000.**

▲ **Calif., Sacramento**—BANK OFFICE—Crocker-Anglo National Bank, 1 Montgomery St., San Francisco, plans by John S. Bolles, 14 Gold St., San Francisco, 75,000 sq. ft. bank office, parking area, Capitol Ave. N St., 4th and 5th Sts. **$3,000,000.**

▲ **Calif., San Diego**—HOMES—Caspro Development Co., 322 "F" St., Chula Vista, homes, 15 acre, 61st and Detroit. **$1,155,000.**

▲ **Colo., Denver**—COMMUNICATIONS CENTER, etc.—University of Denver, Campus, communications center, **$3,000,000;** administration and classroom bldg. **$1,500,000-$2,000,000.** CD 12/5/49.

▲ **Conn., Danbury**—HOUSES—Aden Development Corp., Stadley Rough Rd., 129 houses, Hawley Rd. **$1,290,000.**

▲ **Conn., Milford**—RESEARCH CENTER—General Services Admin., 18 and F Sts., N.W., Wash., D. C., Shellfish Research Center. **$1,325,000.**

▲ **Fla., Fort Lauderdale**—APARTMENT, etc.—Owner, c/o Chester W. Trowbridge, archt., 3215 N. Ocean Blvd., 2 bldgs. 60 units, 10 bldgs., 90 units apartment, swimming pool, north section of here, **$4,000,000.**

▲ **Ga., Atlanta**—MOTEL—Julius Epstein, 231 S. La Salle St., Chicago 4, Ill., plans by A. Epstein & Sons, 2011 Pershing Rd., Chicago, Ill., 115 motel, near Atlanta Airport **$1,600,000.** Bids about May 1. CD 9/2.

▲ **Ga., Atlanta**—NURSES HOME—Georgia Baptist Hospital, 300 Boulevard N.E., plans by Stevens & Wilkinson, 157 Luckie St. N.W., Student Nurse Home, **$2,500,000.** CD 9/19/57.

▲ **Hawaii, Honolulu**—COMMERCIAL HOTEL, etc.—Ben F. Kong & Assocs., 435 Bishop Bank Bldg., plans by Geo. K. C. Lee & Assocs. Ltd., Suite 211, Kapiolani Bowl Bldg., 10 story, rein.-con. commercial hotel and office, Kuhio Ave. and Kalaimoku St. **$1,500,000.**

▲ **Hawaii, Honolulu** — BEACH HOTEL — Charles J. Pietsch, Rm. 556 Alexander Young Hotel, 10 story beach hotel, incl. several 2 story apartments and beach improvements. **$12,000,000.**

▲ **Ill., Lake Forest**—SCIENCE CENTER—Lake Forest College, Sheridan and Deerpath Rd., plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, 3 story glass science center, **$1,700,000.** Bids in June. CD 2/21/56.

▲ **Kan., Lenexa**—SHOPPING CENTER—Blue Valley Development Co., 1 story, 100,000 sq. ft. shopping center, 500-car parking, 95 St. and Interstate Hy. 35. **$1,250,000.** Constr. late 1960 or early 1961.

▲ **Ky., Louisville**—OFFICE—Ken-Tex Investment Co., P. O. 7236, Dallas, Tex., plans by Augustus & Doumas, 135 Breckenridge Lane, Zone 7, 5 story, 50,000 sq. ft. office NW corner Shelbyville and Bramton Rds. **$1,500,000.**

▲ **Md., Rockville**—APARTMENT—Milton Polinger & A. Becker, 8500 New Hampshire Ave., Silver Spring, plans by J. Cohen, 7961 Eastern Ave., Silver Spring, (2nd section) apartment, Rockville Pike near Jefferson St. **$6,000,000.**

▲ **Mass., Middleton**—RESIDENTIAL DEVELOPMENT—Middleton Development Corp., 1622 Beacon St., Brookline, residential development, Main St. **$3,330,000.** Bids in June, 1960.

▲ **Mass., Middleton**—SHOPPING CENTER—Middleton Development Corp., 1622 Beacon St., Brookline, Mass., shopping center, Main St. **$1,500,000.** Bids in June, 1960.

▲ **Mass., Springfield**—MOTEL—Crossroads Development, c/o Munson & Mallis, Inc., archts., 6 Frost St., motel, restaurant and swimming pool, Boston Rd. and Parker St. **$3,000,000.** Constr. 1960.

▲ **N. J., Lakehurst**—HOUSES—Harley & Most, 1440 Oakwood Ave., Lakewood, 117 houses, Summit Park Ave., Manchester Twp. **$1,500,000.**

▲ **N. J., Mays Landing**—SHOPPING CENTER, etc.—Atlantic Development Corp., c/o Samuel Buxbaum, 110 E. 42 St., New York, N. Y., plans by Frank Grad, 11 Commerce St., Newark, shopping center, industrial park, housing, **$8,000,000.**

▲ **N. Y., Glendale**—HIGH SCHOOL—Brooklyn Diocesan Bldg. Office, 191 Joralemon St., Brooklyn 2, N. Y., plans by Stickle & Assocs., 2422 Prospect Ave., Cleveland 15, O., Christ The King Diocesan High School, Metropolitan Ave. and 69th St. **$9,000,000.** CD 3/1.

▲ **O., Avon Lake**—HOMES—Avon Acres Development Co., 5531 State Rd., Parma, Zone 34, plans by Marvin Braun, 1311 Commonwealth Ave., Cleveland, Zone 24, addnl. 150 homes, off Walker Rd. **$3,000,000.**

▲ **O., Avon Lake**—HOMES—Society Homes & Prine Land Co., 3308 Lorain Ave., Cleveland, Zone 13, plans by Anderson & Dracon, 4517 Brookpark Rd., Cleveland, Zone 34, 570 homes, Walker and Moore Rds., **$10,000,000;** 50 apartments, Moore Rd., **$6,000,000.**

▲ **O., Grove City** — RESIDENTIAL-COMMERCIAL — H. Burkeley Showe, 4150 Schirtzinger Rd., Hilliard, residential-commercial development, 75 acres, Grove City north side, incl. apartments, bowling alley, motel and supermarket, **$1,750,000.**

▲ **O., Middletown**—APARTMENTS—Cecil Daniels, 4629 Miller Ave., sixty 2 story, bsmnt., brick apartments, off Rte. 122. **$2,500,000.** J. S. Wald & Assoc., N. Bend Rd., Cincinnati, consult. engrs.

▲ **O., Sandusky**—HOMES—G. A. Boeckling, Administration Bldg., Cedar Point, 200 HOMES, western end of Cedar Point, **$10,000,000;** Hotel Breakers renovation and modernizing, **$1,000,000;** four motels adjacent to Hotel Breakers at Cedar Point, **$1,000,000.**

▲ **O., Toledo**—HOMES—Clifford C. Loss, Inc., 4 Poinsetta Dr., 266 homes, Lincoln Green subdivision, off McCord Rd. and Hill Ave. **$3,750,000.**

▲ **Pa., Wayne**—APARTMENTS—Harold D. Greenwell, 1424 Chestnut St., Phila., plans by George W. Neff, 1520 Locust St., Phila., two 300 unit apartments. **$2,500,000.**

▲ **S. C., Charleston**—MOTEL—Life Underwriters, Inc., 304 Meeting St., 7 story motel, Meeting and Calhoun Sts. **$2,000,000.**

▲ **Tex., Dallas** — MERCHANDISING STORE — Exchange Park Co., Wm. A. Blakely and Chas. L. Windham, 1200 Exchange Bank Bldg., Dallas, plans by Lane & Gamble, 434 Exchange Bank Bldg., Dallas, merchandising store, Fair Dpt. Store of Texas, Lessee, **$11,500,000;** 15,000 auto parking, **$1,000,000;** warehouse, **$800,000;** site earthwork, **$150,000;** water sys. **$85,000;** outside lighting sys., **$95,000.**

▲ **Tex., Houston**—STORES—Fed-Mart Corp., Morris Jaffe, 4623 Blanco Rd., San Antonio, plans by De Verne Reed Kittles, 403 Blanco Rd., San Antonio, Store No. 2, NE Sec. of City, **$1,530,000;** Store No. 3, prob. SW Sec. . City, **$1,150,000.** Beretta, Greenslade & Associates, Inc., 1927 N. St. Marys St., San Antonio, consult. engr. CD 1/8.

▲ **Tex., Houston**—OFFICE—Tennessee Gas Transmission Co., Tennessee Bldg., plans by Cowell & Neuhaus, 5619 Fannin St., Houston, and Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., 25 story office, Milam, Louisiana, Lamar and McKinney Sts., **$20,000,000.** CD 6/3/57.

▲ **Tex., Houston**—APARTMENT-HOTEL, etc.—Woodway Glen Developers, Jas. A. McBride & Associates, 3843 N. Braeswood Blvd., 8 to 10 story apartment-hotel, **$2,000,000;** shopping center, **$1,000,000;** luxury apartment, **$1,000,000,** 20-acre site west of Houston Country Club.

▲ **Va., Franklin** — HOSPITAL — Southampton Memorial Hospital, plans by Marcellus Wright & Son, 100 E. Main, Richmond, hospital, **$2,500,000.** CD 4/6.

▲ **Va., Virginia Beach**—HOSPITAL AND NURSING HOME—Princess Anne Medical Center, Inc., plans by Shriver & Holland, Flat Iron Bldg., Norfolk, hospital and nursing home, Virginia Beach Blvd. **$2,000,000.** Isadore & Zachary Rosenfield, 45 W. 45th St., New York, N. Y., consult. archts. CD 4/8.

▲ **Wis., Milwaukee**—HOTEL, etc.—Theo. Gordon, 8050 N. Gray Log Lane, Zone 17, plans by Robert Babbin & Assocs., 3744 W. North Ave., Chicago, Ill., 12 story hotel, 12-15 story office, **$5,600,000.**

▲ **Ont., Ottawa**—OFFICER—The Royal Trust Co., 128 Wellington St., office, Albert and Metcalfe Sts. **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Calif., San Francisco**—BOTTLING AND DISTRIBUTION PLANT, etc.—Joseph E. Seagram & Sons, Inc., 755 Sansome St., plans by John S. Bolles, 14 Gold St., bottling and distr. plant and warehouse, Army, Third, 25th and 26th Sts. **$8,000,000.**

▲ **Ind., Indianapolis** — MAIL ORDER PLANT — Lane Bryant Inc., 752 E. Market St., 1 story, 300,000 sq. ft. mail order plant on 30-acre site at Southeastern and Keystone Aves. **$3,000,000.** Bids soon.

▲ **O., Toledo**—GRAIN ELEVATOR—Indiana Farm Bureau Cooperative Assn., 47 S. Pennsylvania Ave., Indianapolis, Ind., 1,600,000 bu. grain elevator addn., east bank of Maumee River. **$1,750,000.**

▲ **O., Toledo**—GENERATING STATION—Toledo Edison Co., Edison Bldg., generating station addn., turbogenerator, boiler, condenser, related equipment (third generating unit), Bay Shore Station in East Toledo; addnl. substation and transmission equipment, **$28,000,000.** Gibbs & Hill, Inc., Pennsylvania Station, New York, N. Y., consult. engr. CD 1/11.

▲ **Tex., Brownsville**—PLANT—United Salt Corp., 4614 Montrose, Houston, Salt Production Plant. **$4,000,000.**

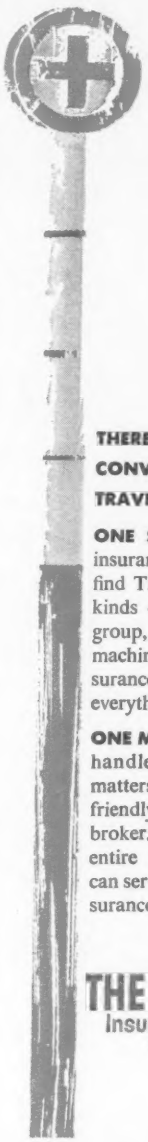
▲ **Va., Galax**—FACTORY—Carroll-Grayson Development Corp., plans by J. Robert Carlton & Assocs., 1618 Monument Ave., Richmond, underwear factory, **$1,500,000.** P. H. Hanes Knitting Co., lessee. CD 3/23.

UNCLASSIFIED

▲† **D. C., Wash.**—OPERATIONS BLDG.—General Services Admin., 19th and F Sts. N.W., plans by Satterlee & Smith, 3 DuPont Circle N.W., operations bldg. for National Capital Parks, south of Independence Ave. between 15 St. and Ohio Dr. S.W. **$1,700,000** (no appropriation).

▲ **Ill., Carbondale** — PARKS AND PARKS IMPRVS. — Carbondale Park Dist., parks and parks imprvs. **$1,250,000.**

▲ **Alberta-British Columbia**—PIPE LINE—Alberta Gas Trunk Line Co. Ltd., 320 9th Ave. S.W., Calgary, Alta., Alberta and Southern Gas Co. Ltd., 5th Floor, Natural Gas Bldg., Calgary, Alta., Westcoast Transmission Co., Ltd., 700 Pacific Bldg., Calgary, Alta., 336 mi. natural gas pipe line from Berland River gasfield, northwestern Alberta to Crows Nest Pass area on British Columbia border, Peace River Area. **$103,145,200.** CD 10/23/52.



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NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 10 Massachusetts

STREETS AND ROADS

May 4 Maine

BUILDINGS—LB & CA

▲ **Keith-Andrew Building Corp.**, Crossroads Plaza, West Hartford, Conn., CA **$1,500,000**, 100 HOUSES, split-level, 6-room Cape Cod and 2 ranch designs, Deer Park Road, SIMSBURY, CONN. Waldman Constr. Co., 77 Lyman Rd., West Hartford, Conn. Awarded Apr. 14.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

May 3 New Jersey

May 3 Maryland May 5, 11 New Jersey

BUILDINGS—BA

▲ **N. J., Perth Amboy**—APARTMENTS—BA 5/12—Housing Auth. City of Perth Amboy, 881 Amboy Ave., two 9 story apartments, Cortlandt and Chapman Sts., Proj. 6.3. $3,304,301. Murray Leibowitz, 214 Smith St., archt. CD 11/5/58.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 4/21,

N. Y.—**Weber Const. Co.**, 133 Wall St., Schenectady, New York. LB **$1,338,790.50**. Est. $1,691,000, (6 bidders), 9 in. c. conc. pavt. variable width 1.72 mi., b. conc. 0.23 mi. PRGS-NYCRR plate girder span 62.0 ft. Fuller Rd. CR 156 elim. of grade crossing, N.Y.C.RR with Fuller Rd. C.R. 156 FASS 60-4 PS 18538. Proj. S-568 (1), Albany Co.

N. Y.—**John Arborio, Inc.**, W. Cedar St., Poughkeepsie, N. Y. LB **$2,098,009.25**. Est. $2,645,000, (15 bidders), 9 in. c. conc. pavt. variable width misc. work 0.2 mi. (acc. c. conc. pavt. 0.77 mi., b. conc. 0.47 mi. Int. Rte. 505, Pennsylvania State Line, Five Mile Point (Penn N. Y. State Line to Sunset Dr.) Rte. 81 FISH 60-3P. Proj. I-81-1 (6), Broome Co.

N. Y.—**Dyer Fitts Constr. Co. Inc.**, Box 738, Binghamton, N. Y. LB **$635,733.60**. Est. $830,000, (7 bidders), b. conc. Type 1A, conc. box twin span 15 ft. each 4.95 mi. Genoa-North Lansing, SH 1566 Rte. 34 FARC 60-36. Proj. F-1155 (1), Cayuga Co.

N. Y.—**Jess F. Howes**, Sidney Center, N. Y. LB **$966,-381.00**, Est. $1,187,000, (3 bidders), b. conc. 5.56 mi. Walton Village; Delaware St. SH 9268, Rock Rift-Colchester SH 1271 Colchester-Delancey, SH 1272 Rte. 10 FARC 60-32. Proj. F-845 (5), Delaware Co.

N. Y.—**Yonkers Contg. Co.**, 969 Midland Ave., Yonkers, N. Y., LB **$2,812,443.00**, Est. $3,436,000, (9 bidders), b. conc. 7.17 mi., misc. work 0.1 mi. City of New York Board of Water Supply Rd. No. 1 (Cannonsville Reservoir), Rte. 10 BWS 60-2, Delaware Co.,

N. Y.—**Vernon Christiana, Jr.**, Box 413, Utica, N. Y. LB **$794,476.25**. Est. $928,000, (8 bidders), b. conc. Type 1A 6.12 mi., misc. work 0.05 mi. Richfield Springs-Getman Corners, Pt. 2, SH 1818 Rte. 28 FARC 60-22, Proj. S-493 (1), Herkimer Co.,

N. Y.—**Green Island Contg. Co.**, 594 Broadway, Watervliet, N. Y., LB **$1,219,711.50**, Est. $1,531,000, (7 bidders), b. conc. 7.98 mi. Schaghticoke-Middle Falls, Rte. 1, SH 8350, Schaghticoke-Middle Falls, Pt. 2, SH 8350, Rte. 40, FARC 60-27. Proj. F-504 (11), Rensselaer and Washington Counties;

N. Y.—**Thomas P. Spagnoletti**, P.O. Box 901, Binghamton, N. Y., LB **$1,621,016.15**, Est. $2,107,000 (9 bidders), b. conc. 4.54 mi., misc. work 0.01 mi. cant. welded girds. comp. 3 sp. 290.5 ft. R.R. G.S. single span pl. gird. 84.2 ft. Montour Falls-Alpine, Pt. 1, SH 1232 Montour Falls-Alpine, Rte. 2, SH 999, Odessa-Mecklenburg, Pt. 1 SH 1655, Rte. 224, FARC 60-31, Proj. F-FG 479 (15) F-400 (6), Schuyler Co.;

N Y.—**Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., LB **$2,757,864.80**, Est $3,557,000, (7 bidders), 8 in. c. conc. pavt. variable width 1.28 mi., misc. work 0.0 mi. acc. 1.43 mi. 5 hys. gr. seps., 2 conc. rigid frames, 70 ft., 67 ft. 2 comp. WF beams 67.8 ft., 73.4 ft., 1 plate girder 109 ft. span, Southern State Parkway (Captree State Parkway to Heckscher State Parkway. SSPRC 60-1, Suffolk Co. CD 3/21.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 4/21,

Peter Kiewit Sons Co., 1024 Omaha Nat. Bank Bldg., Omaha, Neb., LB **$6,028,955**, Est. $8,000,000 (10 bidders), 2nd South Grand Island Bridge, New York State Thruway, Erie Co. CD 3/9.

▲† **American Dredging Co.**, 12 S. 12 St., Phila., Pa., CA **$3,460,160**, channel excav. on Delaware River between Roebling and upstream end of New Bold Island, NEW JERSEY. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Feb. 2. CD 2/10, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Central Pennsylvania Quarry Stripping & Constr. Co., 270 S. Pine St., Hazleton, Pa., CA **$1,742,549**, 10,226 ft. rein.-con. divided highway, 3 pairs alternate bridges, Interstate Rte. 81, L.R. 790(2A) Section of Pen.-Can. Hy. Bids Mar. 24, awarded Apr. 15. CD 3/29, under LB.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, Bids opened 4/19,

Barnhill Contg. Co., Tarboro, N. C., LB **$1,444,029**, (10 bidders), grading, drainage, relocated Rte. 4 8.031 mi. from Ritchie Rd. to Hills Bridge Interchange, incl. 3 dual 24.5 ft. span prestressed concrete beam bridges near Washington, P 735-13-320, Prince George Co. CD 4/5.

BUILDINGS—LB & CA

▲ **F. W. Howell Co.**, 305 Deer Park Ave., Babylon, N. Y., CA **$1,319,000**, JUNIOR HIGH SCHOOL, RIVERHEAD, N. Y. Bd. Educ., Riverhead, N. Y. Bids Mar. 25. CD 3/30, under LB.

▲ **Le Chase Constr. Corp.**, 29 Saratoga St., Rochester, N. Y., LB **$2,901,464** (8 bidders), general contract 10 story St. Ann's HOME FOR THE AGED, Irondequoit Town, ROCHESTER, N. Y. Rochester Catholic Diocese, 50 Chestnut St., Rochester, N. Y. Bids Apr. 13. CD 3/28;

Wright & Alexander Co., 21 Otsego St., Rochester, N. Y., LB **$460,750** (6 bidders), heating and air conditioning for Home for the Aged (Rochester, N. Y.).

▲ **Wm. A. Berbusse, Jr., Inc.**, 101 Park Ave., New York, N. Y., CA **$3,959,000**, HOSPITAL WING, PERTH AMBOY, N. J. Perth Amboy General Hospital, 530 New Brunswick Ave., Perth Amboy, N. J. Bids Mar. 3. CD 3/25, under LB.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA Est. **$25,000,000**, Area 1, Washington Square Redevelopment Project, incl. three 30 story APARTMENTS, 150 RESIDENCES, rehabilitating DWELLINGS, 2 and 3 story OFFICES, SHOPPING CENTER, Front, 3rd, Walnut and Lombard Sts., PHILA., PA. Webb & Knapp, Inc., 383 Madison Ave., New York, N. Y. I. M. Pei & Assocs., 383 Madison Ave., New York, N. Y., archts. Severud, Elstad & Kruger, 415 Lexington Ave., New York, N. Y., engrs. CD 9/1/49, under Public Buildings;

McCloskey & Co., 1626 W. Thompson St., Phila., Pa., CA Est. **$25,000,000**, Washington Square East Redevelopment, Area No. 2, two 26 story APARTMENTS, 85 RESIDENCES, rehabilitating HOUSING, 3rd, 6, Spruce and Walnut Sts. (Phila., Pa.).

▲ **Sovereign Constr. Co., Ltd.**, 1325-17 Pl., Fort Lee, N. J., LB **$3,279,000**, general contract, POLICE ADMINISTRATION BLDG., 7, 8, Race and Cherry Sts., PHILA., PA. Dpt. Procurement, City Hall Annex., Phila., Pa. Bids Apr. 4. CD 3/23;

Daniel J. Keating Co., 3917 Baring St., Phila., Pa., LB **$522,600**, air-conditioning, heating and ventilating for Police Administration Bldg. (Phila., Pa.);

McGee Electric Co., 99 West Ave., Jenkintown, Pa., LB **$639,000**, electrical work for Police Administration (Phila., Pa.).

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

May 6 Kentucky & Indiana

BUILDINGS—BA

▲† **Va., Quantico**—HOUSING—BA 5/10—Area P. Wks., Chesapeake, U. S. Naval Weapons Plant, Wash., D. C., 450 units Capeheart Housing, Marine Corps Schools. Extended date. Nathan C. Hale, Assoc., 916 E. Broad St., Falls Church, Va., archts. CD 3/17.

▲ **La., West Monroe**—HOSPITAL—BA 5/11—Hospital Service Dist. No. 1 of Ouachita Parish, 4 story, 73,000 sq. ft. W. Ouachita Memorial Hospital. $1,750,000. Plans deposit $100. Beauford G. Jaka, Box 698, archt. CD 4/21.

▲† **W. Va., Parkersburg**—POST OFFICE EXTENSION, etc.—BA 5/18—General Services Admin., Public Bldgs. Service, Room 7122, Regional Office Bldg., 7 and D Sts. S.W., Wash. 25, D. C., extending, remodeling existing post office, constr. 5 story, bsmnt., penthouse, rein.-con. pile fdns. court house and federal office, Juliana and 5 Sts., Appr. No. 47X1147, Proj. No. 470031-46902, Contr. No. GS-R3-B-7986. Plans deposit $100. CD 8/21/56.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5, Bids opened 4/19,

W. Va.—**Haynes Constr. Co.**, P. O. Box 1497, Bluefield, W. Va., and **Andersons', Inc.**, P. O. Box 3004, Charleston, W. Va., LB **$1,989,723**, c. conc. 7.334 mi. Interstate 77 from Kenna to Fairplain Interchange, Proj. I-77-3 (24) 125, Jackson Co.;

W. Va.—**Anderson's, Inc.**, P. O. Box 3004, Charleston, W. Va., LB **$88,285**, b. conc. surf. 5.11 mi. Bancroft-Eleanor Rd., Proj. 2163-A, 3247 and 3332 A and B, Putnam Co.;

W. Va.—cancelled bids to have been opened Apr. 14, b. conc. surf. 9.62 mi. Echo-Fort Gay Rd., Proj. 3369-A and B, Wayne Co. CD 4/6.

▲† **Empire Gas Engineering Co.**, 1958 Monroe Dr. N. E., Atlanta, Ga., CA **$1,430,000**, constr. outlying field BRAVO near Naval Auxiliary Air Station, NBy 25463, MERIDIAN, MISS. Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 30, CD 4/4, under LB.

▲ **Blount Bros. Constr. Co.**, 79 Commerce St., Montgomery, Ala., CA **$3,762,659**, est. $4.000,000, 1,000,000-1,500,000 bu. grain elevator, PASCAGOULA, MISS. Jackson Co. Port Auth. and Bd. Supervs. Jackson Co., Court House, Pascagoula, Miss. Bids Mar. 8. CD 3/11, under LB.

▲ **Bauer Dredging Co.**, Port Lavaca, Tex., LB **$1,817,-550** placing approx. 1,710,000 cu. yd. hydraulic fill, approx. 100,000 cu. yd. fill by clam shell dredge and 4,500 lin. ft. creosoted wooden wake field type bulkhead adjoining New Orleans Airport, NEW ORLEANS, LA. Orleans Parish Levee Dist., Rm 200, Royal and Conti Sts., New Orleans, La. Bids Apr. 12, CD 4/5.

BUILDINGS—LB & CA

▲ **Webb Constr. Co.**, 1400 NE 125 St., Miami, Fla., CA Est. **$2,000,000**, WAREHOUSE and OFFICES, NW 167 St. and NW 13 Ave., MIAMI, FLA. Modernage Furniture Corp., 7255 NE 4th St., Miami, Fla. Giller, Payne & Waxman, 4100 N. Miami Ave., Miami, Fla., archts. CD 4/6.

▲ **Fluor Corp., Ltd.**, 2500 S. Atlantic Blvd., Los Angeles 22, Calif., CA design and construct GASOLINE PLANT addn., EUNICE, LA. Runnels Gas Products Corp. sub Union Texas Natural Gas Corp. and Texas Gas Exploration Corp., Houston Club Bldg., Houston, Tex.

▲ **Southern Builders, Inc.**, Box 1815, Shreveport, La., LB **$1,860,000**, (15 bidders), 3 bldgs, 130,000 sq. ft. air conditioned steel frame, brick and aluminum siding South Terrebonne HIGH SCHOOL, HOUMA, LA. Terrebonne Parish School Bd., Houma, La. Bids Apr. 12 CD 3/1.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 5 Indiana May 17 Wisconsin

STREETS AND ROADS

May 17 Wisconsin

BUILDINGS—BA

▲ **O., Columbus**—APARTMENT FOR AGED—BA 5/17—Columbus Metropolitan Housing Auth., 425 W. Rich St., 10 story, 116 unit, brick, steel apartment for aged. $1,500,000. Wright & Gilfillen, 749 Northwest Blvd., archts. CD 1/18.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield, Bids opened 4/19,

Ill.—**Cameron Joyce Co.**, 19 S. 7th St., Keokuk, Iowa, LB **$1,284,236** (5 bidders), surf. course 4.82 mi. FAS 421 between Warsaw and Hamilton, Hancock Co.;

Ill.—**Central Engineering Co.**, P.O. Box 838, Davenport, Iowa, LB **$1,058,712**, conc. paving 2.78 mi. FAI 74 from county line westerly, Rock Island Co.;

Ill.—**Geneva Constr. Co.**, Aurora, Ill., and **E. M. Melahn Co.**, Algonquin, Ill., LB **$1,498,794** (3 bidders), paving, resurf. 1.64 mi. Ill. 31, Aurora, Kane and Kendall Counties;

BUILDINGS—LB & CA

▲ **Finke-Kerr, Inc.**, 15 High Ridge Dr., Loveland, O. Own Forces, **$2,150,000**, 148 HOUSES, off High Ridge, LOVELAND, O. Martin Holman, Inc., 2434 Langdon Farm Rd., Cincinnati, O., engr.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 3 Iowa

STREETS AND ROADS

May 3 Iowa May 6 Kansas

May 17, 18 Texas

▲† **Texas**—BA 5/24—U. S. Eng., Box 1229, Galveston, constr. two stone Jetties, Port Mansfield, Willacy Co., CIVENG-41-243-60-63B, $3,000,000. Plans deposit $1.50. CD 4/20.

▲ **Tex., Abilene**—MISSILE OPERATIONAL BASE—BA About 5/26—U. S. Eng., Box 1600, Fort Worth, Atlas Missile Operational Base, launch complexes, near Dyess Air Force Base, ENG-41-443-60-30. Approx. $10,-000,000. CD 1/29.

BUILDINGS—BA

▲ **Tex., Houston**—HOSPITAL, etc.—BA 5/10—Methodist Hospital, Texas Medical Center, 6516 Bertner St., 9 story hospital and 3 story south addn., 375 beds, all appurtenances, facilities. $6,000,000. Extended date. Milton McGinty and Vance D. Phenix, 2425 Ralph St., archts. Walter P. Moore, 2 Pinedale St., and Raymond L. Jenkins, 2622 Richmond Ave., Houston, engrs. CD 4/11.

HEAVY CONSTRUCTION—LB & CA

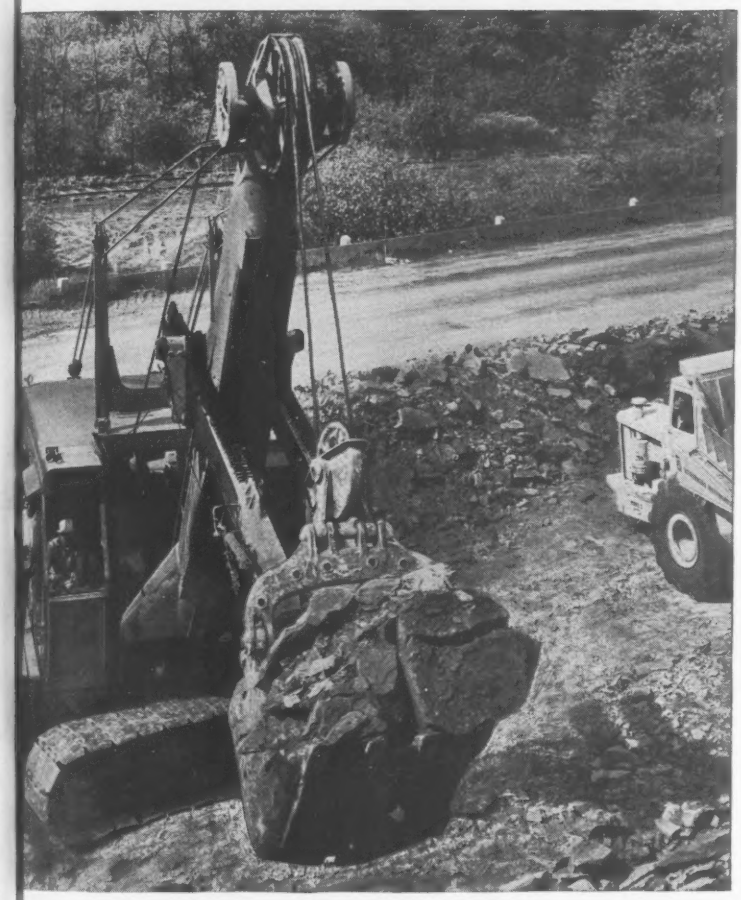
▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City 1, Iowa, CA **$17,400,000**, Atlas Missile launching sites near Lincoln Air Force Base, ENG-25-066-60-52, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Apr. 11. CD 4/14, under LB.

▲† **List & Clark**, 2 West Fortieth St., Kansas City, Mo., LB **$1,919,253**, est. $1,962,256, (7 bidders), levees and channels, Marais Des Cygnes River, Stage II, Ottawa, CIVENG 23-028-60-67, KANSAS. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Apr. 20, CD 3/29.

(Continued on page 92)

330,000 yards of rock removed

by this shovel rigged with USS Tiger Brand Wire Rope



In 15 ten-hour working days this 2½ yard shovel scooped out 30,000 cubic yards of hard sandstone, shale and clay on the rebuilding of Route 39 near Salineville, Ohio. It had just finished another job where it had excavated 300,000 yards of rock . . . with no appreciable downtime.

USS Tiger Brand Wire Rope provides the tough, strong muscles that keep equipment working at top efficiency. These hoist lines must take the shock of digging rock. They must resist abrasive sandstone dust and severe vibration. In spite of these rough conditions, Tiger Brand Rope gives long service life with low cost.

No matter what kind of equipment you operate—shovels, scrapers, dozers, draglines, there's a USS Tiger Brand Wire Rope designed for the job.

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It's designed by the country's leading wire rope engineers. It's made by *one* company that maintains the most complete research and manufacturing facilities in the steel industry. When you buy Tiger Brand, you get the right rope for the job . . . and you can get it quickly from leading distributors in your area. And your installation is no farther than a phone call away from experienced American Steel & Wire field service representatives.

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MOTOR SCRAPER
360
ALLIS-CHALMERS

GET POSITIVE PENETRATION AT CUTTING EDGE

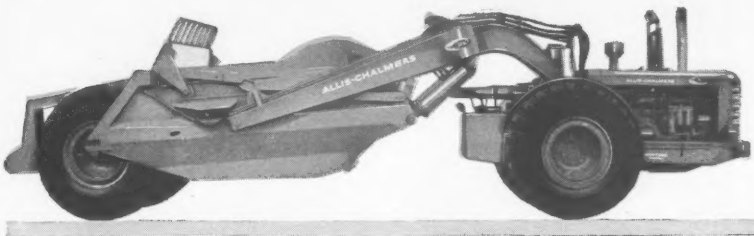
The new, all-hydraulic TS-360 is the only motor scraper in the 30-yd class with double-acting bowl jacks that provide 2-way power for faster loading, more cutting control.

The TS-360's exclusive hydraulic down pressure penetrates quickly into the toughest-loading materials. Penetrating force like this—along with Allis-Chalmers original low, wide bowl—gives you fast, heaped loads every pass.

Slope-cutting is another good example! "Cornering-in" with bowl down pressure lets your operator sink his bit *when* and *where he wants* . . . lets him maintain the best cutting depth while loading. The result: Clean, accurate slopes.

Positive penetration is only one reason you'll get top performance on any size job. *Two-stage steering—forced ejection and highest apron lift—90° steer and* KON-TORK *differential* are earth-moving advantages you cannot afford to overlook.

Put this new 340-hp TS-360 to work for you. Move more dirt per dollar invested than ever before. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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move ahead with

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. . . power for a growing world

(Continued from page 88)

▲† **Atlantic, Gulf & Pacific Co.**, 15 Park Row, New York, N. Y., CA **$1,698,720,** dredging Sabine-Neches Waterway, near Port Arthur, Inv. No. CIVENG-41-243-60-46, TEXAS, U. S. Eng., Box 1229, Galveston, Tex. CD 3/22.

▲ **Natkin & Co.**, Box 13353, Dallas, Tex., CA **$1,746,824,** (10 bidders), water treatment plant or filter plant, pump station, WICHITA FALLS, TEX. City, City Hall, Wichita Falls, Tex. Bids Mar. 31. CD 4/12, under LB;
Chicago Bridge & Iron Co., 1645 E. 21 St., Tulsa, Okla., CA **$93,845,** WW, small reservoir, (Wichita Falls, Tex.).

▲† **U. S. Eng.**, 1519 S. Alaskan Way, Seattle 4, Wash., cancelled bids to have been opened Apr. 26, about 10 masonry bldgs. on rein.-con. fdns. at each of 2 sites, with steel towers, utilities, etc. for Nike-Hercules facilities, Malmstrom Air Force Base defense area, ENG-45-108-60-94, GREAT FALLS, MONT. **$2,500,000.** Will re-advertise. CD 4/12.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas, Denver,
Gardner Constr. Co., Glenwood Springs, Colo., CA **$2,091,301,** est. $2,132,000, concrete pavement and plant mixed asphaltic surf. 14.534 mi. Lafayette Jct., Proj. No. I-25-3 (13) 229, Weld and Adams Counties. Bids Apr. 15. CD 4/19, under LB.

▲ **R. H. Fulton & Co.**, 2323 Erskine Rd., Lubbock, Tex., CA Est. **$6,300,000,** 126 mi. 30 in. gas loop line, Permian-San Juan line loops proj., NEW MEXICO. El Paso Natural Gas Co., Bassett Tower, El Paso, Tex. CD 1/11/56.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.**, 1138 Baker Bldg., Minneapolis, Minn., CA **$1,450,000,** general contract 3 story, ground floor, Olin HALL of SCIENCE incl. 61 x 105 ft. WING, NORTHFIELD, MINN. Carleton College, Northfield, Minn. Bids Apr. 5. CD 3/25.

▲ **Stephenson Loggins & Constr. Co.**, 1001 S. Cherry St., Denver, Colo., Owner Builds, **$5,000,000,** four 10 story APARTMENTS, swimming pool, S. Birch and S. Cherry Sts., on E. Tennessee Ave., DENVER, COLO.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 18, 19 California
STREETS AND ROADS
May 18 California

▲† **Alaska, Adak**—COMMUNICATION FACILITIES—BA 5/5—P. Wks. Office, 13th Naval Dist., Naval Station, Seattle, Wash., 42 x 116 ft. steel frame bldg., 34 x 52 ft., rein.-con. bldg., 17 x 20 ft., steel frame bldg., grading, road constr., erection steel antennas, utilities, etc. for communication facilities, Spec. 28318/60. Over $1,000,000. Plans deposit $100. CD 4/19.

▲† **Alaska**—COMMUNICATION FACILITIES—BA 5/10—U.S. Eng., P.O. Box 7002, Anchorage, communication facilities, Nikolski and Shemya Air Force Stations, Aleutian Islands, Inv. 60-48. Over $2,600,000. CD 4/19.

▲† **California**—BA 5/17—U. S. Eng., 180 New Montgomery St., San Francisco, Bautista Creek Channel imprvt., Station 193 plus 32.93 to Florida Ave., Santa Ana River Basin near Huntington Beach, CIVENG-04-353-60-30. $1,750,000. CD 10/1.

▲† **Calif., Point Mugu**—ROADS, UTILITIES, etc.—BA 5/18—Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, Zone 1, constr. roads, utilities, Nav. Missile Facility, at Naval Missile Center, Spec. 27993. $1,000,000-$2,500,000. CD 9/25.

▲† **Oregon**—BA 5/26—U. S. Eng., City-County Airport, Walla Walla, Wash., grading, draining, surf. for detour U.S. Hy. 30 and UPRR in conjunction with John Day Dam, CIVENG-45-164-60-46, $2,500,000. Plans deposit $1.

HEAVY CONSTRUCTION—LB & CA

▲ **ARIZONA**—State Rd. Dpt., 206 S. 17 St., Phoenix,
Fisher Contg. Co., P. O. Box 6306, Phoenix, Ariz., CA **$1,598,242,** select material aggr. base, b. conc. b. concrete finishing course and interchange structure, City of Bisbee, U. S. Rte. 80, beginning approx. 2 mi. east of Mule Pass Tunnel and extending easterly over new alignment U. S. Rte. 80 approx. 1.9 mi. Benson-Douglas Hy., Cochise Co. Bids Apr. 1, awarded Apr. 12. CD 4/7.

▲† **Baldwin-Lima-Hamilton Corp., Eddystone Division,** Chester Park and Simpson, Phila. 42, Pa., CA **$6,392,000,** eight 155,500-hp. vertical-shaft, hydraulic turbines for Glen Canyon powerplant, Colorado River Storage Proj., Flagstaff, DS-5234, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Nov. 24. CD 11/27, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 4/20,
Ball & Simpson, 685 Delaware St., Berkeley, Calif., LB **$2,122,412,** (14 bidders), relocation 4.2 mi. US Hy. 395 to eliminate steep and winding section on Conway Grade, IX-MNO-23-H,1, Mono Co. CD 3/23.

▲† **A. Teichert & Son, Inc.**, 15534 East Cypress Ave., Baldwin Park, Calif., LB **$1,536,882,** (2 bidders), channel imprvs. Little Dalton Wash, Loraln Ave. to Fifth St., CIVENG-04-353-60-23, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 20. CD 4/11.

BUILDINGS—LB & CA

▲† **General Investment Co.**, P. O. Box 496, Longview, Wash., CA **$5,395,000,** 330 units Capehart HOUSING, Larson Air Force Base No. 2, Inv. 60-28, MOSES LAKE, WASH. Procurement Office, Larson Air Force Base, Moses Lake, Wash. Bids Mar. 10. CD 3/22, under LB.

▲† **Peter Kiewit Sons**, 345 Kieways Ave., Arcadia, Calif., CA **$2,627,711,** constr. BARRACKS and utilities, Camp Del Mar, Marine Corps Base, Spec. 19415-58, CAMP PENDLETON, CALIF. Dist. P. Wks., Office, 11th Naval Dist., San Diego, Calif. Frank L. Hope & Assoc., 1447 6th, San Diego, Calif., archts. M. A. Nishkian, 3754 Long Beach, Calif., engrs. Bids Apr. 6, awarded Apr. 14. CD 4/11, under LB.

▲ **F. P. Lathrop Constr. Co.**, 800 University, Berkeley, Calif., LB **$3,065,000,** Base Bid, First Phase, 4 story, partial bsmnt., rein.-con., 150-bed St. Rose HOSPITAL, incl. 2 story bldg. for laundry and mechanical facilities, Eastshore Hy. and Tennyson Rd., HAYWARD, CALIF. Sisters of St. Joseph, c/o St. Rose Bldg. Fund, Inc., 20001 W. Tennyson St., Hayward, Calif. Bids Apr. 14. CD 3/21.

▲ **Williams Constr. Co.**, 7924 Ivanhoe Ave., La Jolla, Calif., Owner Builds, **$1,622,510,** 124 DWELLINGS, Skyline Hills, Tract No. 2, SAN DIEGO, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 2 Alberta
STREETS AND ROADS
May 10 Newfoundland

BUILDINGS—BA

▲ **Coyne & Ratcliffe**, 1101 Ridgeway St., Coquitlam, B. C., LB **$1,009,787,** (14 bidders), steel, concrete SENIOR HIGH SCHOOL, BURNABY, B. C. Burnaby School Dist., 5325 Kincaid St., Burnaby, B. C. Bids Apr. 13. CD 3/23.

Anglin-Norcross (Quebec) Ltd., 892 Sherbrooke St. W., Montreal, Que., CA Est. **$4,000,000** (9 bidders), 1 story, 418,000 sq. ft., rein.-con. FACTORY, PLANT and OFFICE, air-conditioned, SHERBROOKE, QUE. Walter M. Lowney Co. Ltd., 350 Inspector St., Montreal, Que. Bids Mar. 29, awarded Apr. 15. CD 3/15.

This plastic film ends moisture penetration!

When you lay a concrete slab, remember that 80% of moisture damage will come from *below* the slab. Water vapor in the ground will eventually rise. It can crack or spall concrete; warp and rot wood floors.

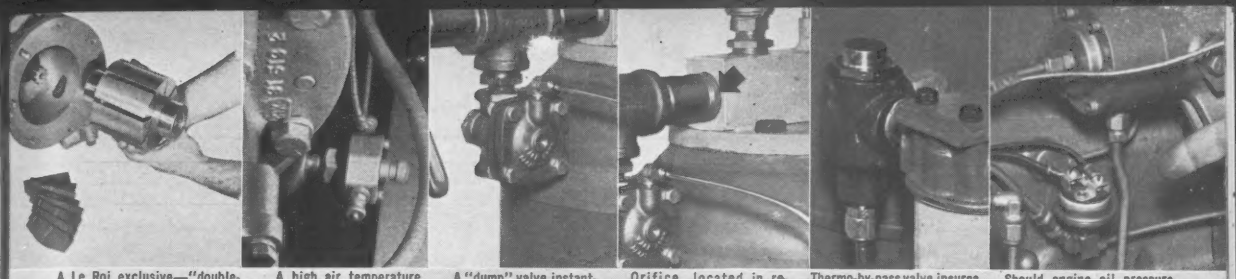
DURETHENE polyethylene stops water seepage at the *ground level.* Just roll out the film and pour concrete on top . . . you have a permanent moisture barrier.

DURETHENE is a tough, durable plastic membrane. It's lightweight, flexible, easy to work with. It's acid-proof, rot-proof, won't crack or break, and it's not affected by temperature changes.

You'll find many uses for DURETHENE film as a permanent moisture barrier; around foundations, inside walls, floors and ceilings. It protects materials stored outside in bad weather. And recently, it has found increased use as a curing blanket in concrete road-building.

When planning your next job, use DURETHENE polyethylene film for lifetime moisture protection. For more detailed information on DURETHENE film, write us, Koppers Company, Inc., Durethene Plant, 7001 West 60th St., Chicago 38, Illinois.

KOPPERS *Durethene.* ® POLYETHYLENE FILM



A Le Roi exclusive—"double-life" rotors for both low and high pressure cylinders. When vanes wear one side of rotor slots, simply turn the rotor end-for-end. Rotors can't be assembled wrong. Cylinder and bearing retainers are precision mated and dowelled.

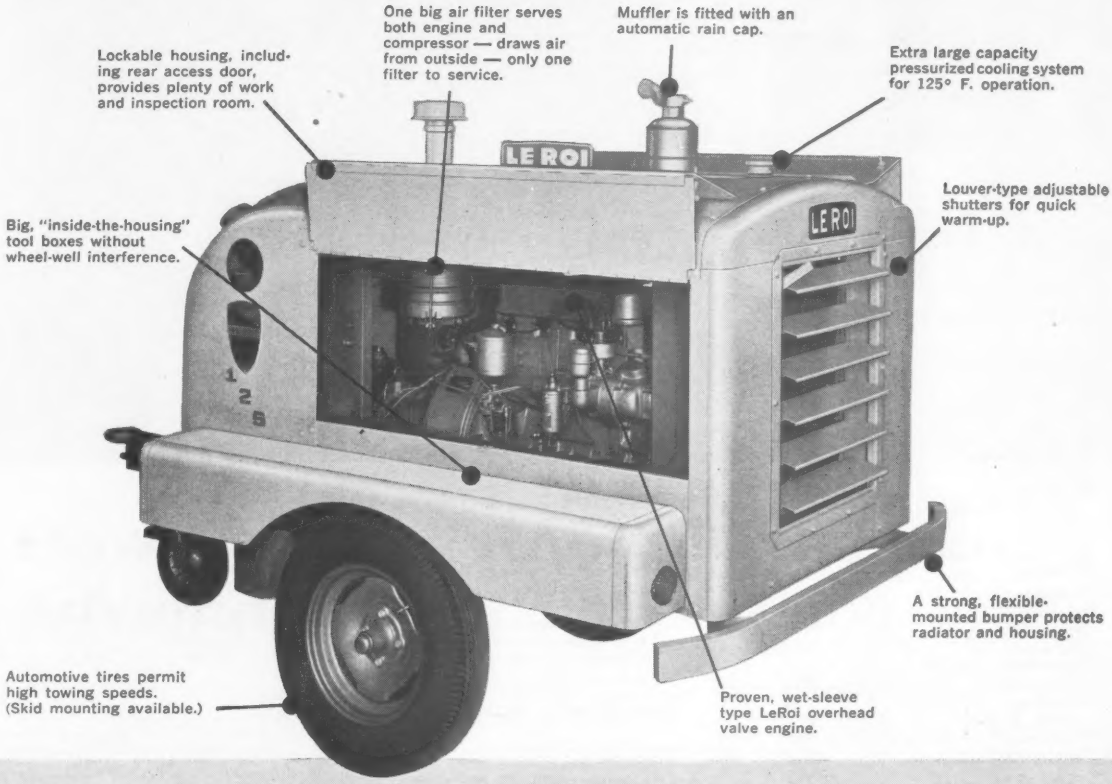
A high air temperature switch is located at the discharge connection of the high pressure cylinder. It immediately cuts off engine if temperature of air-oil mixture in air-end exceeds 230° F.

A "dump" valve instantly releases air pressure in receiver when compressor is shut down. This eliminates possibility of oil backing-up into the compressor air-end.

Orifice, located in receiver outlet, prevents insufficient oil cooling and lubrication of compressor air-end. It automatically insures a minimum of 40 pounds of pressure in the air receiver.

Thermo-by-pass valve insures proper lubrication of compressor air-end during warm-up. Oil is directed to air-end oil pump until oil reaches 130° F. Valve then closes and oil circulates through oil cooler.

Should engine oil pressure drop too low for any reason, this cut-off switch automatically stops engine. Usually found only on larger machines, feature is standard on the 125RG2 rotary.


Lockable housing, including rear access door, provides plenty of work and inspection room.
One big air filter serves both engine and compressor — draws air from outside — only one filter to service.
Muffler is fitted with an automatic rain cap.
Extra large capacity pressurized cooling system for 125° F. operation.
Louver-type adjustable shutters for quick warm-up.
Big, "inside-the-housing" tool boxes without wheel-well interference.
A strong, flexible-mounted bumper protects radiator and housing.
Automotive tires permit high towing speeds. (Skid mounting available.)
Proven, wet-sleeve type LeRoi overhead valve engine.
LE ROI
LE ROI

LIGHTEST AND SLOWEST RUNNING IN ITS CLASS

This 2280-lb. lightweight compressor is designed to save you time, manpower, and money whenever you need dependable 125-cfm air supply.

It's the lightest portable 125 rotary on the market — built with the operator in mind. One man can easily swing it into position on the job-site. And it's balanced for fingertip liftability — with handles on the tow bar and caster wheel to prevent "knuckle-busting."

Le Roi design is easy on the pocket, too. The rotary delivers 125 cfm of free air at 100 psi at only 1600 rpm — 150 to 400 rpm slower than other makes. This means longer engine and compressor life. What's more, superior air-end accessibility cuts down-time and costs for vane inspection and servicing.

See the 125 rotary at your Le Roi distributor's showroom. Or write for Bulletin 123 to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

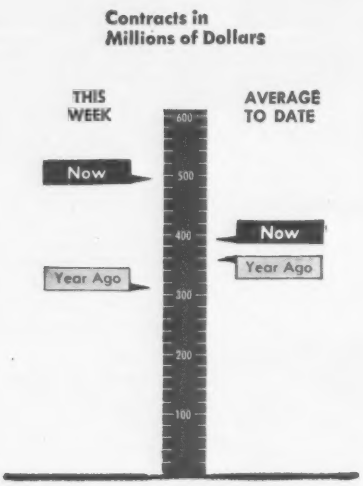
LE ROI 125 ROTARY COMPRESSORS

PC-03

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

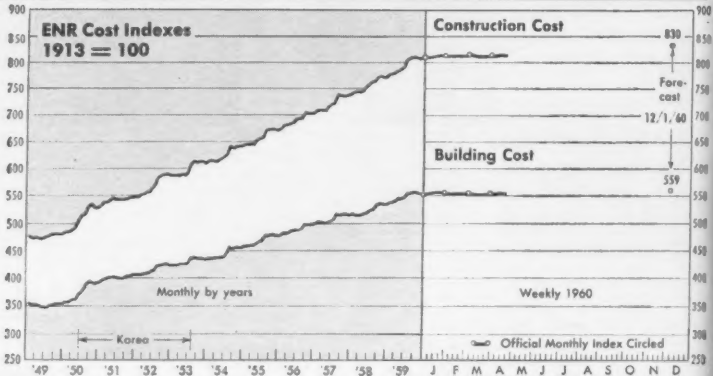
Contracts Awarded In 50 States By Type	This Week millions	Cum. 17 wks 1960	Chge '59-'60 %
All Heavy Construction	$493.1	$6,674.0	+ 9
By Ownership			
PRIVATE	273.3	3,625.8	+24
PUBLIC	219.8	3,048.2	− 5
State & Municipal	161.1	2,333.1	+ 4
Federal	58.7	715.1	−26
By Type of Work			
PUBLIC			
Waterworks	5.7	150.6	+ 6
Sewerage	13.1	177.9	− 7
Bridges*	10.3	315.8	+65
Highways	72.9	906.9	+ 4
Earthworks, Dams & Waterways	19.9	215.4	−18
Buildings:			
Excl. Housing	51.6	692.1	−18
Housing	10.2	162.9	−21
Unclassified	36.1	427.9	−13
PRIVATE			
Buildings:			
Mass Housing	177.7	1,826.2	+45
Commercial	36.1	700.0	0
Industrial	47.7	771.4	− 6
Unclassified	11.8	326.9	+148

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Apr. 21 millions	Cum. 16 wks 1960	Chge '59-'60 %
Corporate Securities	$ 19.0	$ 837.3	−29
State and Municipal:			
All Except Housing	221.6	2,107.4	+ 4
Housing	0	13.6	−56
Federal Loans	2.2	55.6	+63
Federal Aid	....	....	....
Total Nonfederal	$242.8	$3,014.2	− 8
Federal Appropriations:			
Projects in U. S.	....	....	....
Outside U. S.	....	....	....
Total New Capital	$242.8	$3,014.2	− 8



ENR INDEXES (1913=100), 20-cities' average	Week of Apr. 21 1960	% Change from Mar. 17 1960	% Change from Apr. 23 1959
Construction Cost	814.72	+0.20	+3.66
Building Cost	556.50	+0.29	+2.54

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	1960 (millions)	Percent Change from last Month	Year
Total U. S. (50 States)	$122,359	+1.9	+6.8
By Ownership—			
Private	54,250	+3.4	+9.3
State & Municipal	53,697	+1.2	+5.0
Federal	14,412	−1.1	+4.6
By Type of Work—			
Waterworks	2,880	−0.1	+5.9
Sewerage	3,880	+0.4	+6.6
Bridges	3,389	−0.9	+0.4
Highways	13,844	+2.1	+5.8
Earthwork, Dams and Waterways	12,002	−0.3	+1.6
Public Buildings	22,126	+1.3	+7.3
Industrial Buildings	17,488	+1.3	+1.5
Commercial Buildings	26,140	+6.6	+17.8
Unclassified, Private	10,622*	−0.6	+4.0
Unclassified, Public	9,988	−0.4	+3.8

* Includes Private Bridges, $95 million.

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1960 Mar. (millions)	3-months	Percent Change from 1959 Mar.†	3-mos.
Total U. S. (50 States)	$3,546	$7,414	+78.4	+47.4
By Ownership—				
Private	2,367	4,064	+95.8	+56.4
State & Municipal	1,113	2,925	+61.0	+33.9
Federal	67	425	−24.4	+71.7
By Type of Work—				
Waterworks	23	96	−30.1	−34.9
Sewerage	58	176	+25.1	+0.9
Bridges	35	90	−31.8	−48.5
Highways	427	1,173	+160.3	+91.8
Earthwork, Dams and Waterways	8	54	−39.3	−26.6
Public Buildings	559	1,392	+39.7	+48.3
Industrial Buildings	405	907	−13.4	+0.9
Commercial: Mass Housing	1,644	2,160	+506.1	+225.9
Other Building	268	821	−23.9	+16.9
Unclassified, Private	49	177**	−58.0	−47.0
Unclassified, Public	70	369	−2.9	+18.4

** Includes Private Bridges, $5 million.

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (50 States)	$1,102	$2,344	+0.4	−3.2
By Ownership—				
Private	457	929	+17.3	+5.4
State & Municipal	439	981	−9.1	−5.5
Federal	207	434	−8.2	−13.6

† Based on average week: 5 weeks in Mar. '60; 4 weeks in Mar. '59.

How Brown & Root utilizes the advantages of 12 Michigans

Brown & Root, Inc, Houston, Texas, is one of the country's 25 largest contracting firms. Their selection of Michigan Tractor Shovels as a job-site loader is founded on over 20 years experience with all types of equipment, including five years with Michigans.

The firm currently is operating 12 Michigan Model 75A Tractor Shovels. Three of these have backhoe attachments. In general, one Michigan is assigned to each major contract, but their mobility and productive capacity make even small jobs profitable for a large firm such as this. For example . . .

Trenching—gasoline plant construction

The machine, pictured, is digging a 6½ ft deep by 3¼ ft wide trench for piping in a gasoline plant. In this heavy, wet gumbo, the Model 75A digs at the rate of about 20 ft per hour. Its versatility really pays off too. Unit worked at the dump one day, handled sand from the river supply pit the next, dug trenches the next, loaded excess excavation dirt in between jobs.

Loading—street construction

Here's another typical small job . . . a ¾ mile contract calling for lowering street level, widening, installing curbs and gutters and paving. Existing drainage tile and culverts were removed. The Michigan truck-loaded them for haul to the dump. The 77 hp Model 75A with 1¼ yd bucket and 8,000 lb lift capacity handled all loading of excess dirt and also much of the preliminary grading.

Low maintenance

Equipment men at Brown & Root state that maintenance on the Michigans is very low. Also, they have experienced very little downtime.

We'll gladly demonstrate

One Michigan or a fleet of Michigans may be the answer to *your* problems. Why not let us demonstrate. There are nine Tractor Shovel models to choose from—3,000 lb to 30,000 lb lift capacities, with buckets up to 10 cubic yards.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

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Business Plans Record Outlays

U. S. businessmen plan to spend a record-breaking $37.87 billion this year for new plant and equipment. This would exceed the 1957 capital investment peak of $36.96 billion by nearly 2.5% and 1959's actual total of $32.54 billion by 16% (see table).

This is the top finding of the thirteenth annual survey of Business' Plans for New Plants and Equipment conducted in late March and early April by the McGraw-Hill Department of Economics.

Confidence in the longer term is firm, too. The average annual level of spending already planned for 1961-63, inclusive, is higher than the amount spent in 1959.

These are preliminary plans and, in many cases, incomplete. The 1961-63 expenditures may actually exceed current estimates for those years if plans are revised upward, as they have been in the past.

Experience indicates that businessmen generally underestimate capital outlays for periods beyond one year.

(A joint survey by the U.S. Commerce Department and Securities Exchange Commission showed that planned expenditures in 1960 for new plant and equipment totaled $37 billion [ENR Mar. 17, p. 21]. This survey was made in January and February.)

The McGraw-Hill survey shows that of the total $37.87 billion in planned outlays, 30%, or $11.4 billion, will be expended for new buildings. This figure, however, does not include expenditures for buildings by gas utilities and communication companies. Both are heavy spenders for structures, so the 30% proportion for buildings is on the low side.

Manufacturing companies expect to spend a total of $15.2 billion for plant and equipment.

Slightly more than $3 billion of this total will go for construction of new production plants.

In the non-manufacturing category, which plans $22.63 billion in capital outlays, commercial companies will be the largest spenders. They plan investment of $9.17 billion this year. They also are the only companies that expect to put more than half of their investment into buildings, for which they'll spend $5.7 billion.

The total planned outlays by manufacturing companies is 26% more than actual spending in 1959. Among the metal working industries, the automotive group plans to post the biggest increase—66%, for a total of $1.04 billion. Only 8% of this, however, will go to buildings.

Iron and steel companies are next with an anticipated spending increase of 58%, to a total of $1.64 billion. These companies, however, expect that $360.1 million of the amount will go for new construction.

Other big spending manufacturing groups, both in gross outlays and amount of outlays planned for construction, are chemical, machinery, petroleum and coal products companies.

The chemical group plans plant and equipment outlays of $1.7 billion. Structures will claim $357 million of that total.

Machinery firms, with total planned outlays of $1.25 billion, expect to put $288 million in new buildings. Petroleum and coal products companies expect to invest $2.84 billion, of which $397.6 million would pay for construction.

Other significant findings of the survey include:

- Manufacturers' emphasis on modernizing for efficiency as opposed to increasing capacity.
- Continued boosting of outlays for research and development aimed at introduction and mass production of new products.
- The large amount of depreciation allowances and the anticipated increase in such allowances in the future, that will be available for financing of plant and equipment expenditures.

Manufacturers' capacity will be increased by only 5% this year—the smallest such planned increase in the past 10 years except for 1958.

Expenditures for research and development hit a record $9 billion last year—exactly the amount companies reported they planned to spend one year ago. This year, industry plans to boost research expenditures by 6%. By 1963, R&D outlays are expected to rise by another 12%.

But looming is a possible increase in outlays for buildings. This could stem from the heavy emphasis being placed on research from which will come new products and processes.

(Story continues on p. 98)

Capital Spending Plans by Industry

	1959 Actual*	1960 Planned	1959–1960 % Change	Preliminary Plans 1961	1962	1963
	Millions of Dollars					
ALL MANUFACTURING	$12,067	$15,243	+26%	$14,161	$13,330	$13,618
Iron & Steel	1,036	1,637	+58	1,522	1,142	1,039
Nonferrous Metals	313	369	+18	347	357	346
Machinery	909	1,253	+38	1,068	1,055	1,108
Electrical Machinery	519	763	+47	809	712	648
Autos, Trucks & Parts	641	1,064	+66	872	802	898
Transportation Equipment (Aircraft, Ships, R.R. eq'pt.)	390	468	+20	374	333	346
Other Metalworking	876	973	+11	897	899	907
Chemicals	1,235	1,704	+38	1,721	1,687	1,738
Paper & Pulp	630	788	+25	678	556	578
Rubber	190	266	+40	245	198	188
Stone, Clay & Glass	529	695	+31	585	577	552
Petroleum & Coal Products	2,491	2,840	+14	2,783	2,811	3,064
Food & Beverages	825	874	+ 6	837	833	828
Textiles	412	480	+17	465	436	433
Miscellaneous Manufacturing	1,071	1,069	0	958	932	945
NONMANUFACTURING						
Mining	987	1,007	+ 2	1,015	864	895
Railroads	923	1,071	+16	975	946	908
Other Transportation & Communications	4,689	5,168	+10	4,657	4,337	4,355
Electric & Gas Utilities	5,667	6,207	+10	5,545	5,469	5,631
Commercial(1)	8,210	9,172	+12	8,410	7,882	7,923
ALL BUSINESS	32,543	37,868	+16	34,763	32,828	33,330

** U. S. Department of Commerce, Securities and Exchange Commission*
(1) Figure based on large chain, mail order and department stores, insurance companies, banks and other commercial businesses
DATA: McGraw-Hill Department of Economics

High-traction Michigan Tractor Wagons to the rescue

Solved—slow-up due to unexpected plastic clay

The term "unclassified excavation" can mean many things when applied to earthmoving in Vermont's mountain-rimmed Winooski Valley. It *could* have meant chaos to S. V. Rossi Construction Co, Inc, Torrington, Connecticut, one of 11 prime contractors working on 11½ miles of Interstate Highway 89 into Montpelier.

At first, there wasn't even a hint of the trouble ahead. Rossi's job *looked* like the "perfect" intersection. Soil tests showed typical Vermont slate and shale, gravel, sand, light clay and topsoil—520,000 yds in all.

Michigan wades through hub-deep muck

Work went as planned for several weeks . . . then came the emergency! Oozing blue plastic clay, some 75,000 yds of it, all located in one 70 foot deep cut! After a quick conference, it was decided to *try* dozer-feeding a swing shovel and loading most material into their pair of 25 ton Michigan Tractor Wagons, being used for the rock haul.

So the dozer, shovel and 262 hp Tractor Wagons went to work. With their wide-base high-traction 29.5-25 tires, the Model 210's waded hub deep into the oozing clay, were loaded, then pulled themselves out for the half-mile run to the fill.

Clay: 2,000 pay yds per day

In an average 10 hour day, the two Michigans thus made a total of 94 trips, moving between 1,500 and 2,000 yards of paydirt.

By working in conditions that "swallow up" most other equipment and traveling at speeds up to 31 mph, the Model 210 Tractor Wagons helped solve a problem which could have caused a serious setback.

Rock: 3,250 tons per day

Rossi was quick to get the spread back to normal operation. The Tractor Wagons returned to their quarter-mile shot-rock haul. Each Michigan here made 65 trips a day, averaged 25 tons per load. Total daily production for the pair—3,250 tons.

Set a demonstration date

Perhaps Michigan Tractor Wagons could cut your costs, too. See for yourself. Choose from two models—162 hp, 13 ton or 262 hp, 25 ton—then give us a call for a no-obligation demonstration.

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Manufacturing companies now estimate that 12% of their 1963 sales will be in new products. (New products are defined as those "not made in 1959, or products sufficiently changed to be reasonably considered as new products.")

Close to one-third of the reporting companies also indicated that a significant share of their 1960 outlays for new plants and equipment will be for facilities to make new products.

This drive for something new results in manufacturers' plans to increase their capital investment in research facilities. They expect to put $682 million on the line this year for such installations, compared with $523 million that they had planned for 1959.

Corporations will pay for much of their planned capital expansion this year and in succeeding years out of depreciation allowances. They will be the largest single source of funds for new plants and equipment.

These allowances are now equivalent to about two-thirds of total capital spending planned for this year. By 1963, corporations will have $24.8 billion available through annual depreciation deductions, 18% more than in 1959. Manufacturing companies indicate their depreciation allowances will rise by 17%.

This means that depreciation allowances, plus retained earnings and depletion allowances, will provide a strong prop for plant and equipment outlays in the next few years.

Goal: 1.6 Million Houses a Year

The Senate Housing subcommittee headed by Sen. John Sparkman (D., Ala.) is calling for broad changes in government policies to assure construction of 16 million new non-farm houses over the next decade.

Hearings on a bill (S. 3379), which generally contains provisions that would implement the recommendations in the report, will start May 9 before the Senate Banking Committee.

The heart of the subcommittee's program is in its financing and credit recommendations. The Senate group wants both greater federal credit and much more flexible use of government monetary policies to provide a freer flow of mortgage funds from private lenders.

The Sparkman subcommittee issued its recommendations in a report last week on its homebuilding study, made over the last 18 months.

He estimates that 16 million new houses will have to be constructed during the '60s—11 million to accommodate new family formations, and 5 million to replace housing units lost to disaster, demolition, abandonment and conversion.

Government policy, he says, should be geared to provide an average of 1.4 million houses annually during the first five years and 1.8 million units annually in five years following. Production could perhaps rise to 2 million new starts by the end of the decade, he adds. Current estimate for 1960 is 1.2 million starts.

These 16 million new homes are expected to require about $160 billion in new financing funds over the decade, about 60% more than during the previous 10-year span.

To meet these needs, the report recommends:

- The President submit to Congress each year a report setting forth a minimum goal for housing starts during the calendar year; the manner in which federal agencies could help achieve the goal; and recommendations for changes in law that may be required.
- Creation of a new secondary market for government-backed loans, such as a central mortgage bank, or reorganization of the Federal National Mortgage Association (Fannie Mae) to make its secondary mortgage operation more flexible.
- The Federal Home Loan Bank Board report to the subcommittee on possible methods of permitting a greater volume of long-term borrowing by member savings and loan institutions, and creation by the board of a secondary market for conventional loans.
- Establishment of a research program within the Housing and Home Finance Agency to foster cheaper and better methods of home construction; another program of research, education and credit to encourage increased homebuilding for farm families.
- A loosening of the close ties between Federal Reserve Board monetary policies and the availability of mortgage credit. When money is tightened by the Fed, home mortgage credit is the first to feel the brunt. When money conditions are loosened, mortgage money has typically become more readily available.

To try to lessen these sharp swings, federal agencies should study these possibilities: more selectivity in the application of monetary restraint and ease; more flexibility in setting FHA and VA interest rates; and supplementing the free flow of funds to insure that the FHA and VA program do not fluctuate so sharply.

Federal Buildings

Jobs worth $670 million OK'd by works groups

Public Works committees of the House of Representatives and Senate have worked swiftly this year to authorize 64 new federal building projects worth $670 million.

On the basis of these speedy approvals, the House last week passed an appropriation bill providing $80 million for construction of 17 buildings and $25 million for design and site purchase of some 40 others that have yet passed through the planning stage.

Under a 1959 law the General Services Administration has to submit all new building projects, including those previously authorized, to the two public works groups. Every project so submitted, in turn, must receive the approval of both committees before Congress can vote any money for design or construction of the building.

An attempt to bypass this requirement resulted in the deletion of three projects from the House-passed bill last week. The House Appropriations Committee had included $65 million for construction of three Washington, D. C., buildings in the bill it reported. But these buildings and two others in the capital city have not yet been approved by the Public Works committees. On a point of order, the House denied funds for them.

Since last September GSA has submitted 71 building proposals to the public works committees of the House and Senate. The committees have approved all but a half dozen, of which four are in Washington. Approval by the two committees constitutes authorization, making a project eligible for planning and construction funds.

Construction funds voted by the House are 15% less than the estimated costs submitted by GSA. The Appropriations Committee made the cut by eliminating fallout shelters from the structures for a reduction of 5 or 6% and assuming a further savings of 9 or 10% on construction contracts.

GSA thinks the committee cut is too steep.

If the Public Works committees approve the projects for the national capital, the Senate may add two or three to the appropriation bill. All the Washington proposals are for large buildings, estimated at $25 million to $50 million by GSA. The House-passed version contained $37 million for construction of a Chicago building, $9.5 million for one in Memphis, and two of $7 million each for Hartford and Memphis.

One pusher: 22.0 pay yards, 45 seconds

600 hp Michigan Dozer replaces tandem-crawler team

When C. L. Hubner Company, Denver, won a pair of adjacent contracts totaling 14.3 miles of divided highway in northern Colorado, they were faced with 2.4-million yds of unclassified excavation. Much of the borrow had to be taken from the *bottom of a flowing creek*. Should they use draglines and separate haul units or pump the water out and use a pusher-scraper fleet? Economics dictated scrapers.

The stream was ditched and water pumped out by sections as a pair of big crawlers, working in tandem, push-loaded 27 yd scrapers. But this method of pushing was costly and Chuck Loser, Project Supt, wanted faster production. For a year now, his company had owned a Michigan Model 480 Tractor Dozer. It was working in another pit. They called it in.

600 hp Michigan Tractor Dozer steps up production

The question was, "Could the rubber-tired Michigan work in the wet, sandy clay?" Its 600 hp was greater than that of the two crawlers combined. Its 104,000 lb operating weight was about equal to that of the two crawlers combined. With power shift and torque converter, dozer-to-scraper contact was smooth. The wide-base, hydroflated 33.5-33 tires took hold. And the Michigan, alone, did what previously took two big crawlers. Another production problem was solved.

One Model 480 leads to another

For the first time, the firm had found a pusher that could, *by itself*, effectively load their big 27 yd scrapers under almost any condition. It only seemed logical that a firm of Hubner's size could benefit by owning *two* Model 480's. And they have. A second Michigan was recently purchased.

2 Michigans load 12 scrapers

The two Michigans today often load a fleet of 12 to 13 scrapers on haul cycles from 600 feet to 6 miles. Pushing 27 yd scrapers, each Michigan regularly loads a scale-weighed average of 22.0 pay yds. Load time averages 45 seconds. Material has been generally sandy clay, similar to that found most anywhere in the country.

Perhaps Michigans can give you similar cost-cutting advantages. Besides the 600 hp Tractor Dozer there are 375, 262, and 162 hp models. Call us for a no-obligation demonstration.

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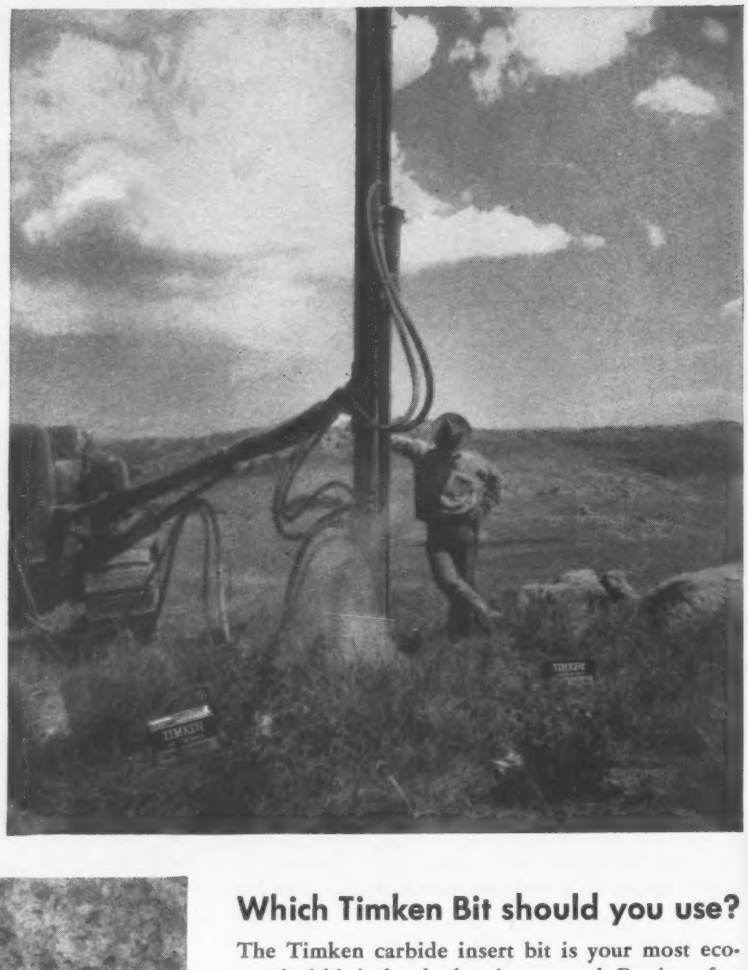
"WE DRILL 15% MORE...AND DRILL IT FASTER... WITH TIMKEN CARBIDE INSERT BITS"

Special report from H-E Lowdermilk, Inc.

LOCATION: U.S. HWY. 287, LARAMIE, WYOMING

Operating conditions: granite and schist

H-E Lowdermilk, Inc. of Virginia Dale, Colo., had to drill through hard abrasive ground—mostly granite and schist—in constructing U.S. Highway 287 between Ft. Collins and Laramie. So they chose Timken carbide insert bits and drilled 15% more feet-per-bit! And they drilled faster, too, because the Timken bits stayed sharper longer than other bits they had used.



Which Timken Bit should you use?

The Timken carbide insert bit is your most economical bit in hard, abrasive ground. But in softer ground, use the low-cost Timken all steel multi-use bit. And because both bits are interchangeable in the same thread series, you can switch bits when the ground changes. Dozens of different Timken bits fit the same drill steel. Both are made from Timken electric-furnace fine alloy steel, have special shoulder unions that protect threads against drilling impact. For help in selecting the right Timken bit for your job, phone or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

TIMKEN®
removable rock bits

Employers Hit Picketing Bill

- **Associations court public support of their efforts to kill situs picketing bill.**
- **They claim the measure will bring chaos to construction industry and hurt the public.**

Employer groups in and out of the construction industry are waging a massive campaign to prevent Congress from making it easier for unions to strike construction projects.

Specific target of the campaign is a situs picketing bill now before the House Rules Committee. The bill would permit unions to picket construction jobs on which more than one contractor is working without running afoul of some of the present restrictions on secondary boycott activity.

Critics of the bill claim it would further satisfy the "insatiable appetite" of construction unions by giving them "monopoly control" over the construction industry. They say the bill is an open invitation to labor strife and higher costs, would restore the closed shop, throttle the use of labor-saving devices and prevent the introduction of new products and materials.

Purpose of the campaign is to kill the picketing bill in the Rules Committee, or, failing that, to defeat it on the floors of the House and Senate.

Anti-situs lobbying activity has become particularly frenzied since the bill was approved by the House Education and Labor Committee. Its opponents know they cannot count on a veto should the bill pass Congress. The Administration supports the measure.

Public opinion proved effective in getting the Landrum-Griffin labor law. It may prove equally effective in defeating the situs picketing bill.

Among the nationally organized groups that are attacking the bill with missionary zeal are the Chamber of Commerce, National Association of Manufacturers, Associated General Contractors, National Association of Home Builders, National Association of Plumbing Contractors, and National Sand and Gravel Association.

The National Society of Professional Engineers has also registered its opposition. It says the bill would allow unions to shut down an entire project in an effort to force engineering and surveying employees into a union.

The bill is commonly known as the Thompson bill, H.R. 9070. A number of companion bills, including S. 2643, have been introduced in both houses. They are referred to as "situs picketing," "legalization of secondary boycotts" and "reversal of the Denver case."

Employer groups opposing the measure are asking everyone within their reach to urge members of Congress to reject the bill. The building trades unions have engaged in similar activity—but in an effort to get the bill passed. Rep. Graham Barden, conservative Democrat from North Carolina and chairman of the House Education and Labor Committee, has sided with the employers in no uncertain terms.

Much of the educational phase of the legislative activity is directed at members of the public and at employers outside the construction industry. NAHB, for example, has put out a pamphlet telling home buyers that they have a big stake in the legislation and urging them to register their opposition to the bill. NAM is telling manufacturers of building materials that their products could be boycotted under the proposed legislation.

The bill is short—124 words. It permits unions engaged in a lawful labor dispute over wages, hours or other working conditions to strike "at the site of the construction, alteration, painting or repair of a building, structure, or other work" if the dispute involves "any of several employers who are in the construction industry and are jointly engaged as joint venturers or in the relationship of contractors and subcontractors in such construction, alteration, painting, or repair at such site."

Legal effect of the bill is to take away from employers working together at a construction site the secondary boycott protection the law now gives when a labor dispute develops with one of the employers. Under the Denver case, such employers are shielded from labor disputes in which they are not involved—they are considered neutrals.

The bill specifically changes only the construction of the secondary boycott provisions of the law [Sec. 8(b) (4)(B)] and its language is limited to on-site work and relationships. It does not purport to change the restrictions placed on blackmail picketing by the Landrum-Griffin law or to enlarge the hot-cargo exemption for the construction industry. The legality of restrictive clauses negotiated by unions and employers is not covered by the bill, nor does the bill purport to change the law on their enforceability, except as to employers working at the same site.

Union advocates of the bill say it merely equalizes the strike rights of construction workers and factory workers by treating common site employers as a single employer. They say the interests of such employers are so entwined as to eliminate any distinction between primary and secondary disputes and that none of these employers can be considered neutral. They admit the bill would be used for organizational purposes.

They deny it would be used for product boycotts or that it would be extended to off-site disputes.

Employer opponents of the bill say they trust neither the unions nor the language of the bill.

They fear its vagueness would open a Pandora's box of labor troubles and victimize manufacturers, suppliers, and other members of the public as well as employers working at a work site.

Principal objections raised in the current employer campaign against the bill are these:

- Contractors do not control each other's labor policies; often have no choice over the selection of subcontractors; are legal entities and should not be held responsible for another's labor disputes.
- The bill would allow the unionization of workers against their will, restore blackmail picketing and the closed shop, and mean the end of nonunion workers and open shop contractors.
- It would retard the use of labor-saving devices and allow a painters' dispute over the use of rollers or spray guns on a tiny subcontract, for example, to stop all work on a project.
- It would allow industrial unions to picket in-plant maintenance and construction work performed by an outside contractor and would allow construction workers to picket industrial plants performing their own construction work.

(*Story continues on p. 102*)

• Construction unions already have too many special privileges.

• Present Labor Board rules allow adequate picketing.

• The bill would permit boycotts of products and materials and cripple cost-saving, technological progress.

• Scope of the bill is not defined. It abounds with loopholes that unions would exploit. What, for example, is a construction "site"? Who is an employer "in the construction industry"? Endless litigation, delays and higher construction costs would result.

Mr. Barden, most eloquent of the opponents, says he "cannot believe" that Congress would give union leaders "the legal power to bring chaos to our nation's largest industry, shackle our efforts to construct vitally needed facilities for our national defense, and imperil the very safety of our nation."

Most of the organized groups opposing the bill are pursuing the course of action adopted by the NAM. The action consists of wide distribution of printed material condemning the bill and asking the public to urge Congress to kill it.

"It is generally agreed," NAM says, "that only a ground swell of opposition will assure that (the bill) will not be enacted by this Congress.

"Communications to your Congressman and Senators expressing your views on this legislation are vital. Urge your friends and associates to write their representatives in addition to your own efforts."

West Coast Workers Get Deferred Wage Increases

Some indication of the upward pressures exerted on current wage negotiations by previously executed long-term contracts comes from southern California, where thousands of construction workers will soon receive deferred wage increases of considerable size.

Automatic increases scheduled for May 1 under contracts negotiated last year include: 22½ cents an hour for 35,000 carpenters in the Los Angeles area, giving them a new scale of $3.82½; 22½ cents for 5,000 cement masons, whose new scale will be $3.85; 21 cents for 6,000 teamsters, giving construction truck drivers a scale of $3.36½.

The top scale for heavy equipment operators will go up to $4.21 on June 1, when 8,000 operating engineers get an automatic wage increase of 20 cents.

The increases will occur under master contracts negotiated last year with the Associated General Contractors, Engineering and Grading Contractors Association, Building Contractors Association and Home Builders Association.

Court Rejects Hiring Rule

Sixth Circuit says a hiring hall clause is not illegal just because it omits the Mountain-Pacific safeguards

A federal court has placed some more skids under the National Labor Relations Board's effort to stamp discriminatory hiring practices out of the construction industry.

The Circuit Court of Appeals for the Sixth Circuit has refused to subscribe to the Mountain-Pacific doctrine that a hiring arrangement is illegal if it does not contain the safeguards demanded by the NLRB. And it has told the board that it "might have saved itself a lot of trouble" if it had observed the regular and legally acceptable formalities of establishing new rules.

Result: It will be sometime before construction unions and employers know where they stand on the hiring hall problem.

The new case involved the dismissal of a worker employed by a brewery. In the unfair labor practice case that followed, the NLRB concluded that the discharge followed from union insistence that the company comply with a labor contract clause that gave the union the exclusive right to refer workers.

Although the legality of the clause was not an issue in the case, the board ruled that the clause was illegal because it did not contain the three mandates of the Mountain-Pacific case: nondiscrimination in the selection of applicants, reservation of the employer's right to reject applicants, and posting of the hiring provisions.

The appellate court said that if it approved the board's action, it would be holding an employer guilty of an unfair labor practice charge solely because its "hiring hall contract, perfectly legal and valid according to the board's settled rule at the time it was made, has now, retroactively, been adjudged per se illegal for want of one of the board's three protective clauses demanded under its new ruling."

The board's approach to the problem is wrong for two reasons, the court said.

• A hiring hall arrangement, either with or without the Mountain-Pacific safeguards, is not per se illegal. The Ninth Circuit Court agrees.

• If the board feels that a new and drastic rule is necessary, it should establish one in the proper way. A rule cannot be applied out of the blue, as here, where the legality of the clause was not an issue. And it cannot be applied retroactively. Publication in the FEDERAL REGISTER with appropriate hearings, or issuance of the rule by case decision after proper notice of the issue, are available to the board.

"The board's doctrine," the court said, "would retroactively invalidate every union contract which contains an exclusive hiring hall provision. If the board's order stands, it is doubtful if even the board can say how many hundreds or thousands of employers and unions are, as of now, guilty of similar unfair labor practices."

NLRB Sets a Faster Pace

New time targets for processing unfair labor practice charges have been set by the National Labor Relations Board. Object is to speed up the handling of labor disputes and to settle a larger number of cases before the complaint stage is reached.

Regional offices of the board have already succeeded in cutting the processing time for unfair labor practice cases by more than 60%, according to NLRB General Counsel Stuart Rothman (ENR Apr. 21, p. 17). It used to take an average of 109 days to reach the hearing stage. Now it takes 43.

The new timetables may bring some measure of relief to the construction industry, where time is a critical factor.

An unfair labor practice charge should move along like this after it is filed in a regional office:

• A full-scale investigation begins within seven days of filing.

• The investigation is completed within 30 days of filing and a decision is reached as to whether the case merits further processing.

• If the case is not withdrawn, settled or dismissed, a complaint and a notice of hearing are issued and the case goes into the trial phase. This stage should be completed within 90 days from the date the original charge was filed.

Regional offices are encouraged to make intensive efforts to settle cases while they are being processed.

If the processing goals are met, Mr. Rothman says, 85% of the unfair labor practice cases filed with the NLRB will be settled, withdrawn, or dismissed in the regional offices within 45 days.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: May 12, 1960.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 12th day of May 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer	M 60-4	Washington St. Bridge (E-34) over Erie Canal, at the Village of Herkimer	....	Clean. & Paint. Bridge	$200 Plans $10	3,400
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 281)	FARC 60-50	Homer-Preble, S.H. FASH 46-3 Project F-215(7)	2.65	Asphalt Concrete, Type 1A	$6,000 Plans $5	104,000
Cortland, Onondaga, Oswego, & Seneca	R.C. 60-41	12 Various State Highways in District 3 on Routes 3, 5, 11A, 41, 89, 104, 221	37.77	Subsealing Cem. Conc. Pavt.	$16,000 Plans $5	290,000
Oswego (Rte. 57)	R.C. 60-49	Fulton-Three Rivers, Pt. 1, S.H. 5250	2.24	Asphalt Concrete, Type 1A	$7,200 Plans $5	133,000
Wayne (Rte. 104)	FARC 60-58	Alton-Wolcott, Pt. 1, S.H. 1516; Alton-Wolcott, Pt. 2, S.H. 8005; Wolcott-Red Creek, S.H. 5290 Project F-362(12); F-346(10)	10.95	Asphalt Concrete, Type 1A	$20,000 Plans $5	370,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Int. Tour. Rte. 490)	FITS 60-9	Int. Rte. Conn. 580, S.H. FIC 58-2 Rochester City: Eastern Expressway, Pts. 2 & 3 Project I-490-2(16)	2.49 (3.43 Acc.)	Traffic Signs and Delineators	$3,300 Plans $5	60,000
Monroe (Rte. 104)	FARC 60-38	Rochester-Webster, Pt. 1, S.H. 98; Rochester-Webster; Pt. 2, S.H. 99; Rochester-Webster, Pt. 3, S.H. 100 Project F-362(11)	3.45	Asph. Conc. = 2.29 Mi.; Misc. Work = 1.16 Mi.	$39,000 Plans $5	703,000
Monroe (Rte. 33)	FARC 60-53	Buffalo, Pt. 5, S.H. 634 Project F-96(10)	0.06	Asph. Conc., Type 2B = 0.05 Mi.; Misc. Work = 0.01 Mi.; Widen. Existing Ribbed Arch Bridge 3 Spans Total 161'	$2,400 Plans $5	43,000
Orleans (Rte. 63)	FARC 60-52	Yates-Lyndonville-Ridgeway, S.H. 581 Project S-407(2)	3.24	Asphalt Concrete	$12,000 Plans $5	217,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Building, 65 Court Street, Buffalo, New York						
Cattaraugus (Rte. 18)	R.C. 60-44	Bradford-Carrollton, Pt. 2, S.H. 8018A	0.17	Rehabilitating Through Truss Bridge 7 Spans—893.6'	$14,000 Plans $5	255,000
Erie (Rte. 5)	FARC 60-62	Lake Shore-Lackawanna City, S.H. 5019 Athol Springs-Walden Cliffs, S.H. 5407 Project U-750(18)	1.36 (1.62 Acc.)	9" Cem. Conc. Pavt. 2 @ 24 & Var. = 1.21 Mi.; Asph. Conc. = 0.09 Mi.; Misc. Work = 0.06 Mi.; Access—9" Cem. Conc. Pavt. 2 @ 24 & Var. = 0.69 Mi.; Asph. Conc. = 0.93 Mi.; Hg. Sep. Comp. Pl. Girder 3 Spans Total 332'	$82,000 Plans $5	1,598,000
DISTRICT No. 6, WILLIAM J. DENNIS, District Engineer, State Office Building, 30 West Main Street Hornell, New York						
Allegany (Rte. 244)	R.C. 60-55	Phillips Creek-Alfred, S.H. 8375	1.90	Asphalt Concrete	$6,600 Plans $5	122,000
Tioga (Rte. 17)	FARC 60-56	Waverly-Owego, Pt. 3, S.H. 5257 Project F-498(6)	3.03	Asphalt Concrete	$14,000 Plans $5	235,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Lewis (Rte. 26)	FARC 60-30	Lowville Village, S.H. 5309 Project F-330(8)	0.91	Asph. Conc. Type 1A = 0.71 Mi. Misc. Work = 0.20 Mi.	$23,000 Plans $5	425,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland & Westchester	T.C. 60-1	Broadway-Hastings-Dobbs Ferry-Mt. Pleasant-Tarrytown-North Tarrytown, S.H. 9206; White Plains-Eastview Road, S.H. 5571; Spring Valley-Knapps Corners, S.H. 689; Knapps Corners-Nyack, S.H. 5178	....	Traffic Signals	$2,500 Plans $5	45,000
Ulster (Rte. 44)	R.C. 60-46	Mid-Hudson Bridge, West Approach, S.H. 9108	0.77	Galv. Beam Type Guide Railing	$750 Plans $5	14,000
Westchester (Rte. 9A)	R.C. 60-45	Unionville-McKeels Corners, S.H. 52; McKeels Corners-Briarcliff Manor, S.H. 53; Briarcliff Manor-Echo Lake, S.H. 54; Briarcliff-Crotonville, Pt. 1, S H 1922	4.52	Galv. Beam Type Guide Railing	$3,000 Plans $5	53,000
DISTRICT No. 9, J. C FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Chenango (Rte. 80)	R.C. 60-59	New Berlin-Columbus, S.H. 704	4.09	Asphalt Concrete	$11,000 Plans $5	199,000
Otsego (Rte. 166)	FATS 60-7	Milford-Roseboom, S.H 8226; Cherry Valley-Roseboom, S.H. 786; East Springfield-Cherry Valley, S.H. 934; Cherry Valley-Sharon Springs, Sharon Springs-Canajoharie Pt. 1, S.H. 8064; Cherry Valley-Sprout Brook, Pt. 1A, S.H. FASH 59-6 Project F-385(4)	6.60	Traffic Signs	$350 Plans $5	6,600
DISTRICT No. 10, AUSTIN M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Kings, Nassau & Queens (Rtes. 27 & 27A)	FABLP 60-1 FAVWE 60-1	Belt Parkway (Gowanus Parkway to Whitestone Parkway); Van Wyck Expressway (Belt Parkway to Grand Central Parkway) Project U-777(6); U-1085(17)	34.92	Aluminum Mall Barrier; Fencing; Guide Railing; Misc. Work	$120,000 Plans $5	2,170,000
Nassau	NSP 60-2	Northern State Parkway	5.53	Roadside Development	$9,200 Plans $5	167,000
Queens (Int. Tour. Rte. 495)	FIHHE 60-3 FAHHE 60-4	Int. Rte. Conn. 514 (Horace Harding Expressway) Section 2; Horace Harding Expressway Section 2 (Contract 5) Project I-495-1(35); U-862(24)	2.72	Roadside Development	$10,000 Plans $5	172,000
Queens (Int. Tour. Rte. 495)	FIHHE 60-5	Int. Rte. Conn. 514-Horace Harding Expressway (Contract 8) (Queens Blvd. to Francis Lewis Blvd.) Project I-495-1(39)	5.30	Clean Up and Miscellaneous Work	$30,000 Plans $5	534,000

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Prequalification: July 15, 1960

Hydroelectric Project Corporacion Autonoma Regional Del Cauca Cali, Colombia

Prequalification July 15, 1960
Prequalification Questionnaire
NOTICE TO CONTRACTORS

It is expected that during the second half of 1960 the Corporacion will request bids from a selected list of prequalified contractors for the construction of the Calima Hydroelectric Project, near Cali. The project will include a rockfill dam with a maximum height of about 100 meters and a volume of about 2,000,000 cubic meters; an 120,000 kw underground powerhouse with a vertical access shaft about 230 meters deep and an inclined access tunnel about 700 meters long; a morning glory spillway; a power intake and gate shaft; a power tunnel and inclined penstock shaft; a tailrace tunnel about 1630 meters long; a diversion tunnel 660 meters long; a tributary diversion tunnel 7 kilometers long; and appurtenant works.

Interested firms that have satisfactorily performed comparable work should apply promptly for prequalification forms to the Corporacion, Apartado Aereo 2366, Cali, Colombia. Completed prequalification forms will be required no later than July 15, 1960. Bids will be received from prequalified bidders only.

READ THE OFFICIAL

PROPOSAL COLUMN OF

ENGINEERING NEWS-RECORD

THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: May 18, 1960

Proposed Sanitary Sewerage System for Milton, Delaware

Sealed bids for the construction of a proposed sanitary sewerage system in Milton, Delaware, consisting of intercepting sewers, pumping stations, force mains, sewage treatment plant, and outfall sewer (Schedule A), and/or main and lateral sewers, house connections, pumping station and force main (Schedule B—Base and Alternate), under Project Nos. PFL-II-7-20 and WPC-Del-2, will be received by the Town of Milton at their office located in the Municipal Building on Union Street in Milton, Delaware, until 2:00 P.M. (E.D.T.) Wednesday, May 18, 1960, at which place and time the bids will be publicly opened and read aloud.

The bidder may bid on either Schedule A or Schedule B (Base and Alternate) or both Schedules A and B (Base and Alternate), involving the following principal items and approximate quantities of work:

SCHEDULE A

42 L.F. 8" C.I. Pipe Sewers; 1910 L.F. 8" Clay Pipe Sewers; 230 L.F. 8" Flexible Joint C.I. Force Mains; 2460 L.F. 8" Mechanical Joint C.I. Force Mains; 240 L.F. 8" Flexible Joint C.I. Pipe under the Broadkill River; 7 Standard Manholes (62 V.F.); 10 MBM Timber Sheeting Left in Place; 5 MBM Creosoted Lumber in Foundation; 200 C.Y. Select Material for Trench Refill; 135 Tons Crushed Mineral Aggregate for Temporary Repaving and Excavation and Refill below Subgrade; 1215 S.Y. Concrete, Bituminous Concrete, and Bituminous Surface Replacement; 3 Underground Pumping (or Lift) Stations; 1 Main Pumping Station, including Emergency Overflow Line to Broadkill River; 3700 L.F. Timber Piling (169 Poles) for Pumping Stations and Treatment Plant Structures; Sewage Treatment Plant (Primary Type), complete, including Control Building, Clarigester, Open Sludge Beds, Chlorine Contact Tank, Equipment, Misc. Piping and Appurtenances (Water, Sewer, and Drainage on Site); Site Improvements, including stated allowance for Landscaping; and Outfall Sewer.

SCHEDULE B
(BASE AND ALTERNATE)

15 L.F. C.I. Pipe Sewers; 36,275 L.F. 8" Clay Pipe Sewers; 9680 L.F. 6" Clay Sewer Pipe House Connections; 164 Standard Manholes (1122 V.F.); 10 MBM Timber Sheeting Left in Place; 5 MBM Creosoted Lumber in Foundation; 400 C.Y. Select Material for Trench Refill; 1650 Tons Crushed Mineral Aggregate for Temporary Repaving; 17,970 S.Y. Concrete, Bituminous Concrete, Stabilized Shoulder and Bituminous Surface Replacement for Permanent Repaving with an Alternate of 5015 S.Y. Bituminous Surface Temporary Repaving as a substitute for Concrete and Bituminous Concrete Permanent Repaving; 70 C.Y. Concrete Cradles and Jackets; 650 S.Y. Concrete Sidewalk Replacement; 1500 L.F. Concrete Curb, Gutter, and Combination Curb and Gutter Replacement; Underground Pumping (or Lift) Station; and C.I. Force Main.

This project will be financed with the aid of a loan to be obtained from the Federal Housing and Home Finance Agency, together with a Federal grant to be obtained from the Public Health Service under the provisions of Public Law 660.

The attention of bidders is directed to the Special Conditions covering this work, which include the Anti-Kickback Regulations issued by the Secretary of Labor (29 CFR Part 3) and other special requirements.

Plans, specifications, and other contract documents (including both Schedules) may be examined at the Town Office located in the Municipal Building on Union Street in Milton, Delaware, or may be obtained from the office of Clarke Gardner and Percy Sterling, Consulting Engineers, Calvert and Bond streets, Salisbury, Maryland, upon deposit of $50.00 for the initial set and $40.00 for each additional set. If the documents are returned in good order within 30 days after the opening of bids, the full amount of the original deposit for one set will be returned to each actual bidder. A refund of $10.00 will be made to nonbidders and subcontractors, or for each additional set of documents obtained by actual bidders.

Each bid must be accompanied by a properly prepared bid bond satisfactory to the Town of Milton in an amount not less than 5% of the total bid of Schedule A and/or Schedule B (Base).

Approved Performance and Payment Bonds, each in the amount of 100% of the contract, or contracts, as awarded, will be required from the successful bidder or bidders.

No bidder may withdraw his bid within 45 days after the actual date of the bid opening.

The Town of Milton reserves the right to award a separate contract to the lowest qualified bidder of each Schedule—utilizing either the Base or Alternate Bid for Schedule B. The right is further reserved to consider informal any bid not prepared and submitted in accordance with the provisions of the contract documents, and to waive any informalities in or reject any and all bids.

TOWN OF MILTON
Ernest M. Jefferson, Mayor
Dr. James C. White, Secretary

April 15, 1960

Bids: May 5, 1960

Soil Explorations and Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on May 5, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE CONNECTION 540-1-1, ROUTE 9W TO TROY-MENANDS BRIDGE INTERCHANGE AREA, NEW PROJECT NUMBER 1-787-3(6)147, ITEM 35B, ALBANY COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-155.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. G. L. Nickerson, District Engineer, New York State Department of Public Works, 353 Broadway, Albany, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $31,625.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

Bids: May 18, 1960

District of Columbia—Armory Board, April 19, 1960. CONSTRUCTION OF D. C. STADIUM, 22nd and East Capitol Street, Wash., D. C. (Invitation No. C-60159-B). Bid forms, plans and specifications are now available from Procurement Office, D. C., Rm. 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $200.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS TO BE RECEIVED 2:00 PM, EDT, May 18, 1960 in Room 424, Procurement Office, 499 Penn. Ave., N.W. and OPENED AT D. C. NATIONAL GUARD ARMORY at 3 PM, EDT on the same day.

OFFICIAL PROPOSALS

Bids: June 7, 1960

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5320) will be received at Lewiston, California, until 2 p.m., Pacific Standard Time, June 7, 1960, for furnishing labor and materials for Trinity and Clear Creek Powerplants, Trinity River Division, California, Central Valley Project. Location near Lewiston, California. Principal items are 29,570 cu. yds. concrete; 13,210 sq. ft. reinforced grouted masonry walls; 1,350,000 pounds—furnishing and erecting steel for powerplant superstructures; Lump sum—installing steel penstocks; and other work. Completion time 560 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California; P. O. Box 247, Lewiston, California; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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OFFICIAL PROPOSALS

Bids: May 19, 1960

Town of Plymouth Sewer Authority Terryville, Connecticut Contract No. 2—Trunk Sewer

ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of a Trunk Sewer in the Town of Plymouth, Connecticut, will be received by the Town of Plymouth Sewer Authority at the Authority's office in the Town Hall, 130 Main Street, Terryville, Connecticut, until 6:30 P.M., Eastern Daylight Saving Time, May 19, 1960, at which time they will be publicly opened and read aloud.

Information for Bidders, Bid Form, Schedule, Agreement, Form of Performance and Labor and Material Bond, Specifications, Plans and other Contract Documents may be examined at the office of the Town of Plymouth Sewer Authority, Town Hall, 130 Main Street, Terryville, Connecticut, or at the office of Gibbs & Hill, Inc., Pennsylvania Station, New York 1, New York, and copies thereof may be obtained upon deposit of $20.00 for each set. The full deposit will be refunded to each Bidder, and one-half the deposit to each Non-Bidder upon the return of such set in good condition within ten (10) days after the opening of bids. Checks shall be made payable to the Town of Plymouth Sewer Authority.

A bid deposit will be required with each bid in an amount not less than five percent (5%) of the maximum price bid for the bid schedule.

The Authority reserves the right to waive any informalities in or to reject any or all bids.

TOWN OF PLYMOUTH SEWER AUTHORITY
TERRYVILLE, CONNECTICUT
BY Joseph R. Kasper, Jr., Chairman
Albert N. Wollenberg, Secretary

April 28, 1960.

Bids: May 19, 1960

Town of Plymouth Sewer Authority Terryville, Connecticut Contract No. 3—Lateral Sewers

ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of Lateral Sewers in Town of Plymouth, Connecticut, will be received by the Town of Plymouth Sewer Authority at the Authority's office in the Town Hall, 130 Main Street, Terryville, Connecticut, until 6:30 P.M., Eastern Daylight Saving Time, May 19, 1960, at which time they will be publicly opened and read aloud.

Information for Bidders, Bid Form, Schedule, Agreement, Form of Performance and Labor and Material Bond, Specifications, Plans and other Contract Documents may be examined at the office of the Town of Plymouth Sewer Authority, Town Hall, 130 Main Street, Terryville, Connecticut, or at the office of Gibbs & Hill, Inc., Pennsylvania Station, New York 1, New York, and copies thereof may be obtained upon deposit of $20.00 for each set. The full deposit will be refunded to each Bidder, and one-half the deposit to each Non-Bidder upon the return of such set in good condition within ten (10) days after the opening of bids. Checks shall be made payable to the Town of Plymouth Sewer Authority.

A bid deposit will be required with each bid in an amount not less than five percent (5%) of the maximum price bid for the bid schedule.

The Authority reserves the right to waive any informalities in or to reject any or all bids.

TOWN OF PLYMOUTH SEWER AUTHORITY
TERRYVILLE, CONNECTICUT
BY Joseph R. Kasper, Jr., Chairman
Albert N. Wollenberg, Secretary

April 28, 1960.

OFFICIAL PROPOSAL

RATE $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Class. Adv. Div.; Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: May 12, 1960

Soil Explorations and Foundation Investigations Richmond County, N. Y.

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on May 12, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 512, CLOVE LAKES EXPRESSWAY, SLOSSON AVENUE TO RICHMOND ROAD, NEW PROJECT NO. 1-278-1(6)1, ITEM 28B, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-156.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $26,815.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: May 19, 1960

Town of Plymouth Sewer Authority Terryville, Connecticut Contract No. 1 Sewage Treatment Plant

ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of a Sewage Treatment Plant in Town of Plymouth, Connecticut, will be received by the Town of Plymouth Sewer Authority at the Authority's office in the Town Hall, 130 Main Street, Terryville, Connecticut, until 6:30 P.M., Eastern Daylight Saving Time, May 19, 1960, at which time they will be publicly opened and read aloud.

Information for Bidders, Bid Form, Schedule, Agreement, Form of Performance and Labor and Material Bond, Specifications, Plans and other Contract Documents may be examined at the office of the Town of Plymouth Sewer Authority, Town Hall, 130 Main Street, Terryville, Connecticut or at the office of Gibbs & Hill, Inc., Pennsylvania Station, New York 1, New York, and copies thereof may be obtained upon deposit of $30.00 for each set. The full deposit will be refunded to each Bidder, and one-half the deposit to each Non-Bidder upon the return of such set in good condition within ten (10) days after the opening of bids. Checks shall be made payable to the Town of Plymouth Sewer Authority.

A bid deposit will be required with each bid in an amount not less than five percent (5%) of the maximum price bid for the bid schedule.

The Authority reserves the right to waive any informalities in or to reject any or all bids.

TOWN OF PLYMOUTH SEWER AUTHORITY
TERRYVILLE, CONNECTICUT
BY Joseph R. Kasper, Jr., Chairman
Albert N. Wollenberg, Secretary

April 28, 1960.

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24 Month Contract

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All replies completely confidential

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P-4158, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Experienced on heavy sewer construction and treatment plants. New England location, to start June, 1960. Opportunity for permanent association with growing consulting firm. Send complete resume, references, and salary data.

P-4161, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Staff M. E. Architects' office. Experienced design, general M. E. for normal commercial, industrial structures. Profit sharing and benefits. Send resume and salary expected to

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• POSITIONS VACANT

Highway Engineer with combined location survey and design experience for permanent position with consulting firm in Southern Connecticut. Position involves supervision of survey parties prior to assuming design duties. P-4216, Engineering News-Record.

Estimator-Project Manager building construction. Opening for experienced engineer with field experience. Permanent position, advancement, opportunity. Write stating age, experience, salary, to Algernon Blair, Inc., P. O. Box 749, Mongtomery, Ala.

Soils Engineer:—An expanding firm of Consulting Engineers requires the services of a fully qualified Soils Engineer to advise upon soils problems as they affect basic design and planning of all phases of the Company's work. Applicants should be at least 35 years of age and be eligible for registration as a Professional Engineer in the Province of British Columbia. In addition to comprehensive design experience they should have spent several years on the practical application of soils mechanics to earth dams and large constructional works. Ability to draft clear and concise specifications for earthworks is essential. The successful applicant would be expected to take full responsibility for the work assigned to him and must be capable of working with the minimum of supervision. The salary would be approximately $800.00 per month but is open for discussion. Reply, in confidence, giving full details of training and experience to P-4239, Engineering News-Record.

Project Manager and Superintendent for bridge construction with well-established firm operating in the Mid-West. Civil Engineering degree preferred but not required. State background experience and general qualifications. Also salary required. P-4266, Engineering News-Record.

ENGINEER-DESIGNER

Minimum 10 years of experience in the design of hydro structures in U. S., some planning experience desirable. Send complete resume of experience and qualifications to the

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With heavy experience background in dams, tunnels and hydroelectric projects. Work domestic or foreign. Salary commensurate with experience. Write:

P-3097, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Personnel Section
JOHN W. ROUSE CONSTRUCTION CORP.
Box 236, Gouverneur, New York

• POSITIONS VACANT

Highway and Bridge Engineers—Excellent opportunity for qualified Engineers—permanent openings. Send detailed resume with salary requirements to Rackoff Associates, 1033 W. Third Ave., Columbus 12, Ohio.

Construction Superintendent, must be experienced in water main construction. Salary commensurate with experience and ability. Sumbit resume of experience and reference to Clem Construction Corp., 3405 Ocean Avenue, Oceanside, L. I., N. Y.

Chief, Construction Division. To direct and coordinate inspection of all construction activities for the Water Department of the City of Phila. We require college graduation with a civil engineering major and seven years of professional civil engineering experience including four years in the field of construction, three of which must have been in a highly responsible supervisory capacity. Equivalent combinations of experience and education will be considered. We also require registration as a professional engineer as issued by the Penna. State Registration Board for Professional Engineers, or other registration which qualifies the holder for Penna. registration through reciprocity agreement of the Penna. State Registration Board. Salary starts at $10,596 per year with regular increases and liberal fringe benefits. Please send resume, before May 4, 1960, to Miss Alma Goldman, Room 975, City Hall, Phila. 7, Penna.

Civil Engineer for staff consulting work. Must have broad background in highway construction, knowing control of soils, design and control of concrete and bituminous mixes, plus actual field construction supervision. Minimum age—35 years. Salary, $9,000 to $12,500. Only complete application will be reviewed. Reply P-4257, Engineering News-Record.

Office Design Engineer and Sales Engineers. Established firm in Midwest desires engineer with structural training—prestressed concrete experience desirable—for design, design drafting and general office engineering. Also need sales engineers with experience in construction projects. Applicants for either position should furnish resume of experience, education and salary expected in initial reply. P-4255, Engineering News-Record.

Civil Engineer—Capable of assuming direction of municipal public works and engineering department. Must be registered, graduate engineer and a U.S. Citizen. Salary open; dependent upon qualifications and experience. If interested write giving qualifications and salary requirements. Write to: P-3872, Engineering News-Record.

Construction Superintendent in Puerto Rico. Must be familiar with public works. Please send resume stating experience, age, education and salary. P-4287, Engineering News-Record.

• POSITIONS WANTED

Construction manager, age 48. Twenty years supervisory experience in the construction of buildings. Proven record as a producer with top grade contractors. $15,000.00 minimum. PW-4098, Engineering News-Record.

(Continued on opposite page)

• POSITIONS WANTED
(Continued from opposite page)

Brick Foreman—Young aggressive Bricklayer & stonemason very cost conscious—1 year college—familiar with all types masonry work —travel no problem. U. S. or foreign. PW-4193, Engineering News-Record.

Construction Manager B.S.C.E. Exp. General Supt. Chf. Eng. Hvy. Const. Roads, Tunnels, Flood Control, Bldgs Will Relocate, Box 48, Clayton, Mo., E. Elswirth.

Chief Engineer—Senior Engineer for Engi-neering Contractor—or Mining Company. Diversified experience in all phases of mine, mill and refinery plant design and construction. Non ferrous, non metallics and iron ore benefication. Proven competence to organize, direct and control large projects in this specialized area of work. Graduate and registered professional engineer. Age 53. PW-4194, Engineering News-Record.

Construction Engineer: Reg. P.E. Contractor's design and field engineering work in California desired. Age 38—12 years exp.—Cofferdams —Bridge conc. Frame Bldgs.—Estimating— Shoring — Underpinning—Formwork—false-work—10 years with present employer—Available in June. RE 68430—West Springfield, Mass.

Construction Mgr.—Gen. Supt. B.S.C.E. Age 43, 20 yrs extensive experience foreign & US all phases construction major Petrochemical, Refinery & Indus. plants. Management responsibility incl. estimating, budgeting, cost control, contract negotiations, labor relations, engineering & purchasing, customer relations & negotiations, financial, office & construction organization & administration. Will consider partnership or part interest. Available relocation immediately. PW-4097, Engineering News-Record.

Architectural Engineer, 38, German license, U. S. citizen, 8 years U. S. Experience in industrial and commercial planning and construction, seeks position overseas, Europe preferred. PW-4112, Eng. News-Record.

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Construction Engr.—College grad., married, age 37, 11 years exp. All phases industrial & commercial construction. Prefer Southeast. PW-4135, Engineering News-Record.

Construction Manager, Age 48, with 25 years experience, Desires connection with firm specializing in chemical and industrial type construction, Domestic or foreign. PW-4122, Engineering News-Record.

Proj. Engr.—Mngr. 15 yrs. Indust. and Com. Contrs. Stl., Alum., Glass, and Food Mills, Assemb., Mnfr., Wat. and Sew. Plnts. Pref. Mid West and South. Avail. immed. PW-3891, Engineering News-Record.

Project Manager—General Superintendent— Structural Engineer, not registered. Complete experience over thirty-five years in Estimating, General Superintendent, Job Superintendent, Project Manager and Contractor. Experience ranging on contracts up to Twenty-Five Million Dollars. Foreign or Domestic work acceptable. PW-4215, Engineering News-Record.

Building Construction Supt. or Ass't.—36, 12 years Gen. Contractor, bid to completion up to $100,000.00. Bonded. Fair Spanish. Prefer Latin America for a change. PW-4198, Engineering News-Record.

Sales Engineer: Structural, Rebar and allied products. Direct sales, estimating, engineering and product promotion with architects and engineers. Age 32, willing to relocate and travel. Desire position with aggressive company. PW-4208, Engineering News-Record.

Superintendent finishing million and quarter plant in Middle West for Chicago Contractor desires change. Middle Atlantic States preferred. PW-4226, Engineering News-Record.

Professional Pilot commercial & instrument ratings. Spanish speaking production expeditor. Presently employed Latin-American project nearing completion. Over 10,000 hrs. Perfect safety record. Sober, personable, responsible and dependable family man. References and resume on request. PW-4230, Engineering News-Record.

Project Manager—Superintendent, B.S.C.E. (Structural Engineering) age 30. Eight years with Engineer-Construction Cos. engaged in million dollar industrial & military building. Desire responsible field or office position. Available in May. Contact F. J. Snell, 10312 Fiske Court, Rancho Cordova, Calif.

Experienced Reinforcing Steel Detailer. With Five years experience. Desires to relocate. Prefer Southeastern or Southwestern area. PW-4222, Engineering News-Record.

• POSITIONS WANTED

Contractor's Engineer-Graduate C.E. licensed in N. Y. and N. J. Heavy Construction, Buildings, Missile Projects. Bid to completion experience. Project Manager and Estimating. Wide experience in the preparation and processing of construction claims and arbitration. Presently employed. Can be available in one month. PW-4229, Engineering News-Record.

Sanitary Engr., M.S., P.E., married, 32, ex-perienced in large water pumping and distribution projects, industrial waste investigations, evaluations and treatment facilities. Desire responsible engineering position, administrative or managerial. PW-4200, Engineering News-Record.

Soils or Geology Engr., 36 age, 11 yrs. exp. in road, dam, and tunnel const. and oil geol. Supervise borings, soil and concrete tests in field and lab. M.S. geol. Locate in East. PW-4203, Engineering News-Record.

Construction Engineer-Superintendent, BSCE, 32. 10 years experience in highway and building construction. 6½ years with general building contractor as Engineer, Supt., and manager. Available now. $8500. PW-4227, Engineering News-Record.

General Manager with take-charge ability, seeking permanent location and alliance with reputable progressive commercial and industrial general contractor. Proven administrator with 30 years versatile construction experience comprising responsibility for estimating, bidding, negotiating, purchasing, cost control and job management. Organizer, coordinator, procedure systems consultant and versed on all phases of construction methods. Age 49, married, salary range 18,000 to 25,000. PW-4214, Engineering News-Record.

Teaching or research position desired by structural engineer, 26, M.S. with 1½ years teaching, 1 year research and 3 years design experience. PW-4258, Engineering News-Record.

P.E. & R.L.S. (Mich. Registration) 32, 11 yrs. exp., surveying, subdividing, sewer, water and pavement design. PW-4259, Engineering News-Record.

Experienced Draftsman 39 years old, with fourteen years experience in detailing and design of bridges and culverts. Want permanent position in established Consulting Firm or Private Engineering or Architects in Rochester, New York or San Antonio, Texas. $6,500 to $7,500 salary required. PW-4262, Engineering News-Record.

Structural, Civil—Design & Detailed Plans on Sub-Contract. Licensed Professional Engineer. Ten years experience of design & constr. of industr. plants, mach. foundations, schools, dwelling houses. PW-4243, Engineering News-Record.

• POSITIONS WANTED

Supt. of blasting, heavy constr. specializing on rock, road work, shaft, tunnel, quarry, general foundation. PW-4278, Engineering News-Record.

Graduate civil engineer, 29, 6 years in heavy construction, office and direct supervision, desires direct supervision job with possibilities of further responsibility, on hydro, roads, airports, etc. Anywhere. Australian; resident of Canada. PW-4241, Engineering News-Record.

Project Engineer-Supervisor-Estimator. Resume on request, prefer West Coast. PW-4240, Engineering News-Record.

Equipt. Supt. or Asst. Age 40. Over 20 yrs. in heavy const. Maintain, operate all types. PW-4246, Engineering News-Record.

Chartered Company Secretary, 27, from London, experienced in Building, Civil Engineering seeks appointment B.W.I. or British Guiana. PW-4271, Engineering News-Record.

Graduate Civil Engineer: Registered. Nine years Design experience in sewers, highways, drainage, and Programming IBM 650. PW-4244, Engineering News-Record.

Field supt. of heavy excavation and drainage, 25 years experience on big projects. PW-4273, Engineering News-Record.

Estimator-Superintendent thoroughly qualified to handle complete job bidding stage to completion. Public Works, Heavy Construction, Bridges, Commercial and Industrial Buildings. Best of references. Available immediately. Will relocate to suit job. PW-4265, Engineering News-Record.

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Executive—15 yrs legal-construction experience, Administrator, Mgr., Atty., Govt. Contracts, Claims. PW-4223, Engineering News-Record.

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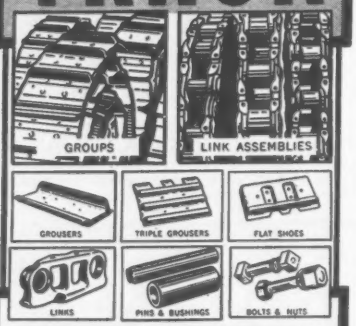

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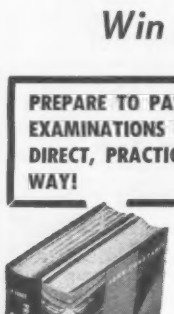

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U. S. Rubber Co., Mechanical Goods Div. 20

Williams Equip. & Supply Co. 80

Professional Services 111-114

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 106, 107
Notices
Proposals 103-105
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 107-110

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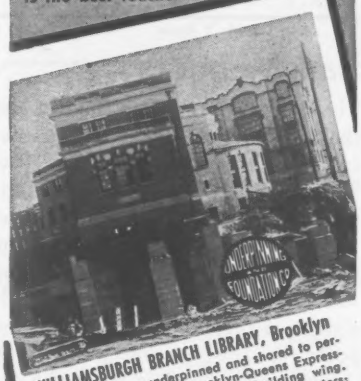

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Bad Manners

TOO MANY CONTRACTORS conduct the housekeeping on their jobs in the city as though they were out in the country with no one to think about but themselves. Thoughtlessly, often illegally, and nearly always unnecessarily, they block sidewalks and encroach on streets with their materials storage and equipment to an extent that does no credit to themselves or to the construction industry they represent. Such bad housekeeping, even though it may be winked at by the police, can only beget the worst possible public relations.

Obviously a building cannot be constructed on a site that is crowded between adjacent structures without causing some inconvenience to passersby. For the most part they accept a reasonable amount of clutter cheerfully, and particularly if there is some apparent effort on the part of the contractor to keep it to a minimum. But they grumble when they have to pick their way around piles of sand, brick or tile or when they have to drive on the wrong side of the street to pass double parked trucks. And they know the grumbling is justified because they have seen jobs where about the only evidence that work is in progress is the noise coming from the other side of the safety fence.

Most cities have laws limiting the amount of a street that a contractor can occupy. In their own self interest contractors should obey them regardless of the attitude of police officials toward enforcement. Certainly it makes little sense for a contractor to post his name on a job proudly and then permit it to look like an unkept junk yard. Such bad manners are never good business.

Not the Contractor's Job

THE CONCEPT that designers, not contractors, should engage testing laboratories on construction projects continues to gain adherents. The latest organization to endorse the principle is the American Institute of Consulting Engineers. The principle had been previously approved by the American Institute of Architects, American Society of Civil Engineers, National Society of Professional Engineers, Consulting Engineers Council and by many local organizations.

Experience shows that the relationship between contractors and testing laboratories leaves much to be desired. Too often, contractors select laboratories on the basis of price alone, sometimes forcing the low-bidding laboratory to skimp on quality of services if it is to stay in business.

Furthermore, laboratories engaged by contractors find a conflict of interest. Their responsibility is to verify that materials and equipment are in accordance with plans and specifications; thus they are employed to protect the interests of the owner. Yet they cannot help feeling obligated to the contractors who select them and pay the bill.

It is far more logical for owners or their designers to engage testing laboratories. Testing services are a part of the responsibility for field supervision that lies with designers. The cost should be borne directly by the owners by addition to the field supervision fees.

This procedure will be advantageous to owners by insuring that construction will be in accordance with plans and specifications and that money spent for inspection is fully serving that purpose. Architects and engineers will find satisfaction in the assurance that inspection of their projects is not assigned to firms outside their control. They will be eliminating a practice that was whittling away at their reputations by permitting faulty materials, equipment and workmanship to escape attention during construction. And last but not least, they will find the fees for field inspection a welcome source of income.

Two Lanes Are Too Little

IT TOOK TOO LONG for highway planners to come to a realization that three-lane, two-way roads were unsafe as well as economically unsound. But if this blind spot has now been removed, another persists. It is that long two-lane bridges can still be justified on major roads in this age of mounting highway traffic.

What seems to be an outstanding example of this kind of folly is scheduled to make its appearance this fall when construction starts on a bridge across the Hudson River at Newburgh, N. Y. This is no minor undertaking. It will cost $20 million. It will be nearly 8,000 ft long. And it is on a route that could attract heavy traffic long before the bridge is ready to be scrapped. Yet it is to be only two lanes wide.

As is usual in these cases, the reasoning used to justify a two-lane width is direct, logical and wrong. This particular bridge could have been four lanes wide if New York State had accepted federal aid and made it toll free. But since a free bridge would have competed with other Hudson River toll crossings owned and operated by the New York State Bridge Authority, it was decided that this agency should build the Newburgh Bridge as a toll structure. Nothing more than a two-lane structure could be fitted into the fiscal or traffic philosophy of the Authority.

This is the same kind of reasoning that was used to justify three-lane roads when four-lane roads should have been built in the interest of safety and ultimate economy. Decisions to build long, expensive two-lane bridges will prove to be equally mistaken. If a four-lane structure cannot be justified, the logical conclusion is that the location is either not right or not ready for a new bridge of any type. Two lanes are too little for major bridges.

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